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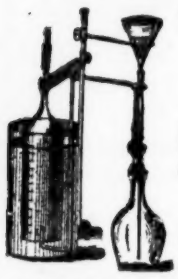

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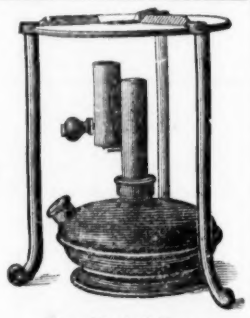

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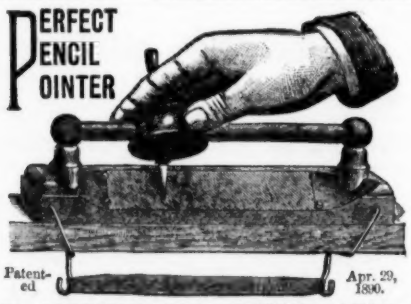

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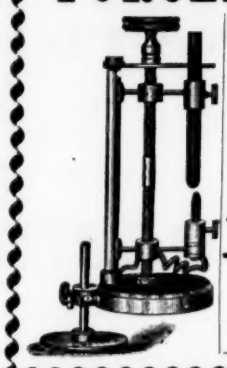

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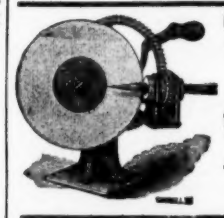

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ILLUSTRATED PLANT LIFE. — (V.)

BY MACLEOD, BROOKLYN, N. Y.

ROOTS.

THE root is that part of a plant which grows downward into the ground. It serves a twofold purpose, gathering up nourishment for the other parts of the plant, and by means of its rootlets holding the plant firmly in position.

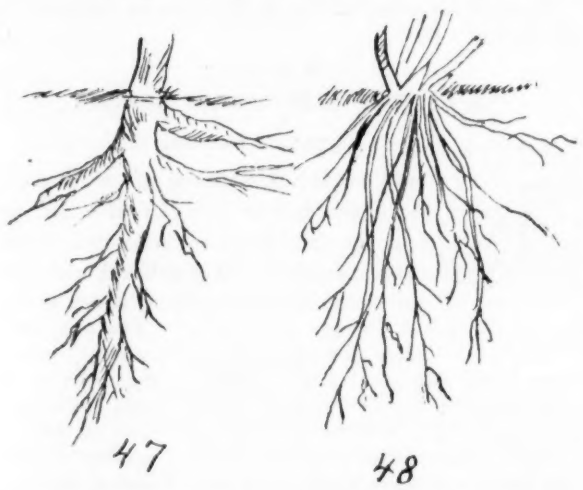
CLASSES OF ROOTS.

Roots are divided into three classes, varying as to the length of time they live.

Annual roots are those that last but one season. Most of our ornamental plants belong to this class, also oats, Indian corn, beans, barley, and cucumbers They spring from seeds planted in the spring, grow and blossom during the summer, and at the first frost they fade and die. Plants of such short duration are called *Annuals.*

Biennial roots, as the name implies, live *two* years. During the first year the plants do not blossom, but merely prepare for the second year's work. They dry and wither during the winter, but do not die, and in the spring of the second year awake to active life, bear leaves, blossoms, and fruit, and at the end of the season die, when their seeds are ripe. Well-known examples of biennial plants are the beet, cabbage, carrot, cauliflower and turnip.

Perennial roots are those that live on year after year. Trees and shrubs belong to this class. They lose their



foliage and have a *dead* appearance every winter, but in the spring wake up and put forth fresh shoots and leaves The potato, onion, leek, artichoke, lily, peony, dahlia, tulip, and iris are all perennial.

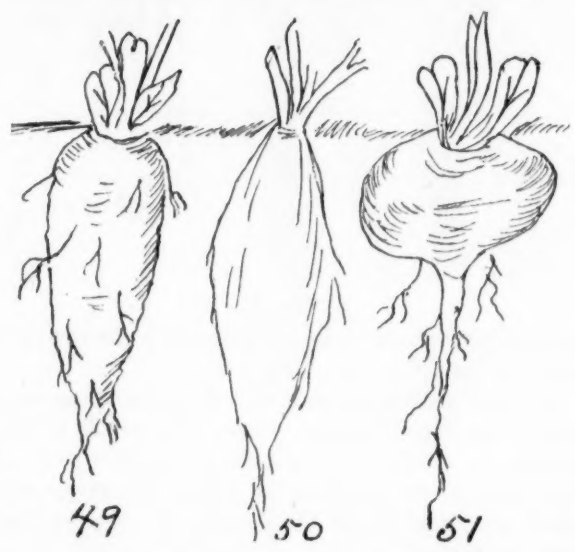
PRIMARY ROOTS AND SECONDARY ROOTS.

Those roots which grow downward from a sprouting seed and send out rootlets, *underground*, are called *primary*, *original*, or *true* roots. Sometimes the *stem* of a plant will by some means touch the ground and a new root be started. Such a root is known as a *secondary*, or *stem*, root. As a rule, annual and biennial plants have primary roots, and those plants which are raised from slips or cuttings have secondary roots. Cut a branch from a geranium and place it in the ground. If it takes root and grows, you will have an example of a secondary root.

FORMS OF ROOTS.

Dig up a number of plants and secure the roots. Note the different shapes and place those that resemble each other in one collection.

Roots are either *fleshy* or *fibrous*, and these terms explain themselves. A fleshy root is shown in Fig. 47, a fibrous root in Fig. 48. Notice the difference. In a fibrous root, the rootlets or fibres are designed merely to absorb nutriment from the soil. Fleshy roots often act as storehouses, in which nourishment is stored for the future life of the plant. They are found on biennials and perennials. A fleshy root, which consists of one straight body, tapering gradually down to a point, is called a tap-root. Fig. 47, already referred to, represents a tap-root. When the root assumes the shape shown in Fig. 49, it is called conical. Examine the portion of a beet, parsnip, or carrot found underground. Other fleshy roots taper at both ends. Examine a radish. *Spindle shaped* or *Fusiform* are the terms used to describe such a root. One is illustrated in Fig. 50. A



turnip-shaped root is shown in the next figure (No. 51). *Napiform* is another name for this shape. An odd root is shown in illustration No. 52. It is a *fibrous* root, some of the fibres having numerous small swellings along their length. There is a strong resemblance between the fibres and strings of beads.

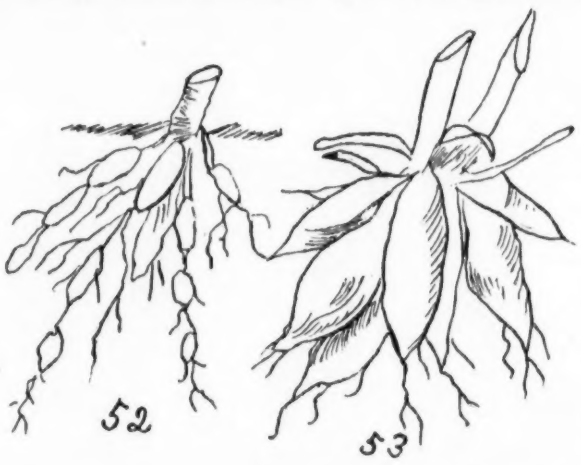
Moniliform roots these are called. When the fibres are thick and fleshy, the root is said to be clustered or tuberous. (See Fig. 53). A dahlia is an excellent example of a plant with a tuberous root.

AQUATIC PLANTS.

Most plants have their roots in the ground, but there are some which take root in the water, the flowers and leaves being on the surface and the roots below. Water lilies belong to this class.

AERIAL PLANTS.

Another style of plant derives its nourishment from the air. The roots do not touch ground, but grow from



the boughs of trees. They obtain no food from the boughs, however, but are entirely dependent upon the air for what is needful.

PARASITES.

Plants which take root on the branches of trees and *do draw* nourishment from the tree are called *parasites.* The mistletoe is such a plant.

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Bindings.

[A binding or band is used to strengthen and cover the raw edges of a seam.]

MATERIALS. — *For the Teacher.* — A large needle, coarse thread, scissors, pins, three pieces of cotton cloth, and three lengthwise strips of cotton cloth, larger, but in the same proportions as those for the pupils, blackboard, and chalk.

For the Pupils. — No 8 needle, No. 50 thread, scissors, pins, three pieces of cotton cloth, each half a yard long and seven inches wide; for the bindings three lengthwise strips of cloth, each eight inches long and three inches wide.

Preparations. — 1. Teach the use of bands by showing garments or models of the three different ways of putting on bands, explaining each method and its use.

2 Let the children mention the different parts of garments requiring bands.

3. Explain that the warp or lengthwise threads of cloth are stronger than the woof threads, and as bindings require strength the strips should be cut lengthwise of the cloth. That the children may be able to distinguish between the warp and woof threads, if there is no selvedge, show them that the warp thread is coarser and more twisted, while the woof thread is flat and wavy, and that the woof edge will stretch in pulling, while the warp edge will not.

4. Show the children how to find the middle of each band, and mark the place by cutting a notch (Fig. 1) at the edge of each side, or by taking a cross stitch (Fig. 1) with colored thread. The gathers and binding should

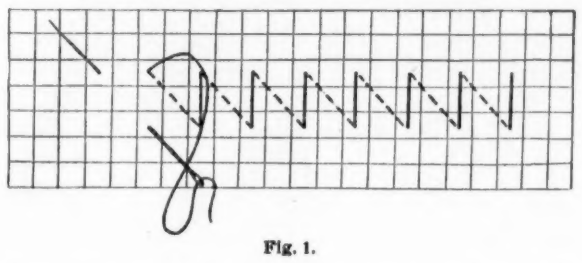

Fig. 1.

always first be marked into an equal number of divisions, and the corresponding divisions placed together, that there may be no more fullness in one part than in another.

5. Next show how to cut off each corner of the bands, one-fourth of an inch deep (Fig. 1), to avoid having many thicknesses of cloth when the corners are turned.

6. The marking of the middle of the band and the cutting of the corners can be easily demonstrated by drawing Fig. 1 on the blackboard.

7. Have the children make a narrow hem on the two short sides of each large piece of cloth and a broader hem on the lower edge of the pieces. After having the children mark the middle of the upper edge by a notch or cross-stitch, have them gather two of the pieces of cloth, holding the right side next to them, taking the stitches one-fourth of an inch from the upper edge, and skipping over twice as much as they take up. The two pieces should be stroked after being gathered.

Show the children how to prepare the third piece of cloth for overhanding to a binding by creasing one inch from the raw edge, and, without unfolding it, making two or more rows of gathering directly under each other, the first row being one eighth of an inch from the folded edge.

GATHERS SET INTO A BAND.

Setting-in of Gathers. — 1. Crease the four edges of the band one fourth of an inch from the edge.

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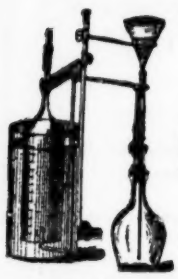

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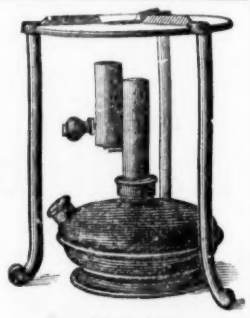

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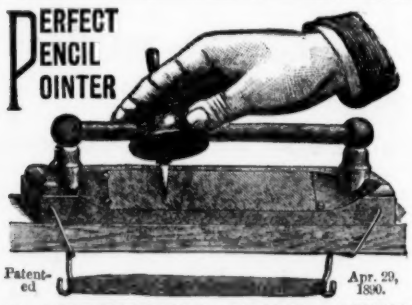

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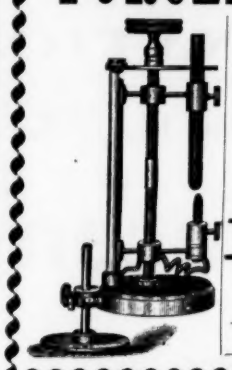

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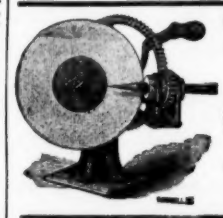

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[Written for the JOURNAL.]

THE USUAL WAY.

BY MAX OTTO.

Will you interview
The first robin for me,
And see what the rules
Of this spring time will be?

Will the rain come and plead,
And the sun warmly woo,
And the earth coyly wait,
All the early months through?

And then, after awhile,
Through the bird songs and showers,
If we watch shall we see
Signs of promise of flowers?

The robin will know;
Ask him, then, if this year
Will be like all the rest,
And at last full of cheer?

WHAT THEY SAY.

GLEANINGS FROM THE CLEVELAND MEETING.

A. B. BLODGETT, *Syracuse:* Even the born teacher needs to be born again.

ELLEN G. REVELEY, *Cleveland:* For the best study of the child one must know how best to study himself.

MISS MARY NICHOLSON, *Indianapolis:* The great point in training a teacher is to interest her in the study of children.

PRINCIPAL W. J. MILNE, *Albany Normal School:* Possibly superintendents criticise the methods of training teachers because so many of them are untrained.

SUPERINTENDENT E. P. SEAVER, *Boston:* What possible inducement can any one have to teach school who is not interested in children. A training department is as important to a normal school as the normal school is to the profession. Its aim is to "get a move on" the theory of the normal school.

GEORGE H. MARTIN, *Boston:* A normal-school girl from one of the best of country homes is preferable to a training-school girl from one of the poorer country homes, even though her preliminary education is not so good. What we want is the best material as well as the best training.

DR. D. L. KIEHLE, *St. Paul:* Normal-trained teachers are at a disadvantage when they are supervised by college-bred men. It is of little avail to give girls training unless they have sympathetic, trained supervision. The young normal-school graduate needs intelligent, sympathetic nursing. They are professionally immature and cannot mature without sympathetic supervision.

W. H. HERVEY, *Teachers' College, New York:* The college graduate needs to be born again before he becomes a superintendent. He is the hardest man in the world to do anything for professionally. Between the college diploma and the day when he has children of his own is a long, dry time for the superintendent. Secondary teachers and superintendents have special need of professional training.

REPORT OF THE FIFTEEN.

TRAINING OF TEACHERS. BY SUPT. H. S. TARBELL.

Read at Cleveland Meeting, Department of Superintendence, February 19, 1895.

This report treats of the training of elementary and secondary teachers, considering first that training which should precede teaching in elementary schools. By elementary schools are meant the primary and grammar departments of graded schools, and ungraded or rural schools.

That teachers are "born, not made," has been so fully the world's thought until the present century that a study of subjects, without any study of principles or methods of teaching, has been deemed quite sufficient. Modern educational thought and modern practice, in all sections where excellent schools are found, confirm the belief that there is a profound philosophy on which educational methods are based, and that careful study of this philosophy and its application under expert guidance are essential to making fit the man born to teach.

Conditions for professional training — age and attainments.

It is a widely prevalent doctrine, to which the customs of our best schools conform, that teachers of elementary schools should have a secondary or high school education, and that teachers of high schools should have a collegiate education. Your committee believe that these are the minimum acquirements that can generally be accepted, that the scholarship, culture, and power gained by four years of study in advance of the pupils are not too much to be rightfully demanded, and that as a rule no one ought to become a teacher who has not the age and attainments presupposed in the possessor of a high-school diploma. There are differences in high schools, it is true, and a high-school diploma is not a fixed standard of attainment; but in these United States it is one of the most definite and uniform standards that we possess, and varies less than college degrees vary or than elementary schools and local standards of culture vary.

It is, of course, implied in the foregoing remarks that the high school from which the candidate comes is known to be a reputable school, and that its diploma is proof of the completion of a good four-years' course in a creditable manner. If these conditions do not exist, careful examination is the only recourse.

If this condition, high-school graduation or proof by examination of equivalent scholarship, be accepted, the questions of the age and attainment to be reached before entering upon professional study and training are already settled. But if a more definite statement be desired, then it may be said that the candidate for admission to a normal or training school should be eighteen years of age and should have studied English, mathematics, and science to the extent usually pursued in high schools, should be able to write readily, correctly, and methodically upon topics within the teacher's necessary range of thought and conversation, and should have studied, for two or more years, at least one language besides English. Skill in music and drawing is desirable, particularly ability to sketch readily and effectively.

Training schools.

The training of teachers may be done in normal schools, normal classes in academies and high schools, and in city training schools. To all these the general term "training schools" will be applied. Those instructed in these schools will be called pupils while engaged in professional study, and pupil-teachers or teachers-in-training while in practice-teaching preparatory to graduation. Teachers whose work is to be observed by pupil-teachers will be called model-teachers; teachers in charge of pupil-teachers during their practice work will be called critic-teachers. In some institutions model-teachers and critic-teachers are the same persons. The studies usually pursued in academies and high schools will be termed academic, and those post-academic studies to be pursued before or during practice-teaching as a preparation therefor will be termed professional.

Academic studies.

Whether academic studies have any legitimate place in a normal or training school is a question much debated. It cannot be supposed that your committee can settle in a paragraph a question upon which many essays have been written, many speeches delivered, and over which much controversy has been waged.

If training schools are to be distinguished from other secondary schools, they must do a work not done in other schools. So far as they teach common branches of study, they are doing what other schools are doing, and have small excuse for existence; but it may be granted that methods can practically be taught only as to subjects, that the study done in professional schools may so treat of the subjects of study, not as objects to be required, but as objects to be presented, that their treatment shall be wholly professional.

One who is to teach a subject needs to know it as a whole, made up of related and subordinate parts, and hence must study it by a method that will give this knowledge. It is not necessary to press the argument that many pupils enter normal and training schools with such slight preparation as to require instruction in academic subjects. The college with a preparatory department is, as a rule, an institution of distinctly lower grade than one without such a department. Academic work in normal schools that is of the nature of preparation for professional work lowers the standard and perhaps the usefulness of such a school; but academic work done as a means of illustrating or enforcing professional truth has its place in a professional school as in effect a part of the professional work. Professional study differs widely from academic study. In the one, a science is studied in its relation to the studying mind; in the other, in reference to its principles and applications. The aim of one kind of study is power to apply; of the other, power to present. The tendency of the one is to bring the learner into sympathy with the natural world, of the other with the child world. How much broader becomes the teacher who takes both the academic and the professional view! He who learns that he may know and he who learns that he may teach are standing in quite different mental attitudes. One works for knowledge of subject-matter, the other that his knowledge may have due organization, that he may bring to consciousness the apperceiving ideas by means of which matter and method may be suitably conjoined.

How to study is knowledge indispensable to knowing how to teach. The method of teaching can best be illustrated by teaching. The attitude of a pupil in a training school must be that of a learner whose mental stores are expanding, who faces the great

world of knowledge with the purpose to survey a portion of it. If we insist upon a sufficient preparation for admission, the question of what studies to pursue, and especially the controversy between professional and academic work, will be mainly settled.

Professional work.

Professional training comprises two parts: (*a*) The science of teaching, and (*b*) the art of teaching.

In the *science of teaching* are included: (1) Psychology as a basis for principles and methods; (2) Methodology as a guide to instruction; (3) School economy, which adjusts the conditions of work; and (4) History of education, which gives breadth of view.

The *art of teaching* is best gained: (1) by observation of good teaching; (2) by practice-teaching under criticism.

Relative time.

The existence and importance of each of these elements in the training of teachers are generally acknowledged. Their order and proportionate treatment give rise to differences of opinion. Some would omit the practice work entirely, launching the young teacher upon independent work directly from her pupilage in theory. Others, and much the greater number, advise some preparation in the form of guided experience before the training be considered complete. These vary greatly in their estimate of the proportionate time to be given to practice during training. The answers to the question "What proportion?" which your committee has received range from one-sixteenth to two-thirds as the proportion of time to be given to practice. The greater number, however, advocate a division of time about equal between theory and practice.

The normal schools incline to the smallest proportion for practice-teaching, the city training-schools to the largest. It should be borne in mind, however, that city training-schools are a close continuation, usually, of high schools, and that the high-school courses give a more uniform and probably a more adequate preparation than the students entering normal schools have usually had. Their facilities for practice-teaching are much greater than normal schools can secure, and for this reason also practice is made relatively more important. As to the relative merits of city training-schools and normal schools, your committee does not desire to express an opinion; the conditions of education demand the existence of both, and both are necessities of educational advancement. It is important to add, however, that in the judgment of your committee not less than half of the time spent under training by the apprentice-teacher should be given to observation and practice, and that this practice in its conditions should be as similar as possible to the work she will later be required to do independently.

Science of teaching — psychology.

The laws of apperception teach that one is ready to apprehend new truth most readily when he has already established a considerable and well-arranged body of ideas thereon.

Suggestion, observation, and reflection are each most fruitful when a foundation of antecedent knowledge has been provided. Hence your committee recommends that early in their course of study teachers in training assume as true the well-known facts of psychology and the essential principles of education, and make their later study and practice in the light of these principles. These principles thus become the norm of educational thought, and their truth is continually demonstrated by subsequent experience. From this time theory and practice should proceed together in mutual aid and support.

Most fundamental and important of the professional studies which ought to be pursued by one intending to teach is psychology. This study should be pursued at two periods of the training-school course, the beginning and the end, and its principles should be appealed to daily when not formally studied. The method of study should be both deductive and inductive. The terminology should be early learned from a suitable text-book, and significance given to the terms by introspection, observation, and analysis. Power of introspection should be gained, guidance in observation should be given, and confirmation of psychological principles should be sought on every hand. The habit of thinking analytically and psychologically should be formed by every teacher. At the close of the course a more profound and more completely inductive study of physiological psychology should be made. In this way, a tendency to investigate should be encouraged or created.

Study of children.

Modern educational thought emphasizes the opinion that the child, not the subject of study, is the guide to the teacher's efforts. To know the child is of paramount importance. How to know the child must be an important item of instruction to the teacher in training. The child must be studied as to his physical, mental, and moral condition. Is he in good health? Are his senses of sight and hearing normal, or in what degree abnormal? What is his temperament? Which of his faculties seem weak or dormant? Is he eye-minded or ear-minded? What are his powers of attention? What are his likes and dislikes? How far is his moral nature developed, and what are its tendencies? By what tests can the degree of difference between bright and dull children be estimated?

To study effectively and observingly these and similar questions respecting children is a high art. No common-sense power of discerning human nature is sufficient; though common sense and sympathy go a long way in such study. Weighing, measuring, elaborate investigation requiring apparatus and laboratory methods, are for experts, not teachers in training. Above all, it must ever be remembered that the child is to be studied as a personality and not as an object to be weighed or analyzed.

Methodology.

A part of the work under this head must be a study of the mental and moral effects of different methods of teaching and examination, the relative value of individual and class instruction at different periods of school life and in the study of different branches. The art of questioning is to be studied in its foundation principles and by the illustration of the best examples. Some review of the branches which are to be taught may be made, making the teacher's knowledge of them ready and distinct as to the relations of the several parts of the subject to one another and of the whole to kindred subjects. These and many such subjects should be discussed in the class in pedagogy, investigation should be begun, and the lines on which it can be followed should be distinctly laid down.

The laws of psychology, or the capabilities and methods of mind-activity, are themselves the fundamental laws of teaching, which is the act of exciting normal and profitable mind-action. Beyond these fundamental laws, the principles of education are to be derived inductively. These inductions when brought to test will be found to be rational inferences from psychological laws and thus founded upon and explained by them.

School economy.

School economy, though a factor of great importance in the teacher's training, can be best studied by the teacher of some maturity and experience, and is of more value in the equipment of secondary than of elementary teachers. Only its outlines and fundamental principles should be studied in the ordinary training-school.

History of education.

Breadth of mind consists in the power to view facts and opinions from the standpoints of others. It is this truth which makes the study of history in a full, appreciative way so influential in giving mental breadth. This general advantage the history of education has in still larger degree, because our interest in the views and experiences of those engaged like us in training the young enables us to enter more fully into their thoughts and purposes than we could into those of the warrior or ruler. From the efforts of the man we imagine his surroundings, which we contrast with our own. To the abstract element of theoretical truth is added the warm human interest we feel in the hero, the generous partisan of truth. The history of education is particularly full of examples of noble purpose, advanced thought, and moral heroism. It is inspiring to fill our minds with these human ideals. We read in the success of the unpractical Pestalozzi the award made to self-sacrifice, sympathy, and enthusiasm expended in giving application to a vital truth.

But with enthusiasm for ideals history gives us caution, warns us against the moving of the pendulum, and gives us points of departure from which to measure progress. It gives us courage to attack difficult problems. It shows which the abiding problems are — those that can be solved only by waiting, and not tossed aside by a supreme effort. It shows us the progress of the race, the changing ideals of the perfect man, and the means by which men have sought to realize these ideals. We can from its study better answer the question, What is education, what may it accomplish, and how may its ideals be realized? It gives the evolution of the present and explains anomalies in our work. And yet the history of education is not a subject to be treated extensively in a training school. All but the outlines may better be reserved for later professional reading.

Training in teaching.

Training to teach requires (1) schools for observation, and (2) schools for practice.

Of necessity, these schools must be separate in purpose and in organization. A practice-school cannot be a model school. The pupil-teachers should have the opportunity to observe the best models of the teaching art; and the manner, methods, and devices of the model-teacher should be noted, discussed, and referred to the foundation principles on which they rest. Allowable modifications of this observed work may be suggested by the pupil-teacher and approved by the teacher in charge.

There should be selected certain of the best teachers in regular school work, whom the pupil-teachers may be sent to observe. The pupil-teachers should take no part in the school work nor cause any change therein. They should, however, be told in advance by the teacher what purpose she seeks to accomplish. This excites expectation and brings into consciousness the apperceiving ideas by which the suggestions of the exercise, as they develop, may be seized and assimilated.

At first these visits should be made in company with their teacher of methods, and the work of a single class in one subject should be first observed. After such visits the teacher of methods in the given subject should discuss with the pupil-teachers the work observed. The pupil-teachers should first describe the work they have seen and specify the excellences noted, and tell why these thing are commendable and upon what laws of teaching they are based. Next, the pupil-teachers should question the teacher of methods as to the cause, purpose, or influence of things noted, and matters of doubtful propriety — if there be such — should be considered. Then the teacher in turn should question her pupil-teachers as to matters that seem to have escaped their notice, as to the motive of the model-teacher, as to the reason for the order of treatment, or form of question, wherein lay the merit of her method, the secret of her power. When pupil-teachers have made such observations several times, with several teachers, and in several subjects, the broader investigation may be made as to the organization of one of the model rooms, its daily programme of recitations and of study, the methods of discipline, the relations between pupils and teacher, the "school spirit," the school movements, and class progress. This work should be done before teaching groups or classes of pupils is attempted, and should form an occasional exercise during the period of practice-teaching as a matter of relief and inspiration. If an artist requires the suggestive help of a good example that stirs his own originality, why should not a teacher?

The practice-school.

During the course in methodology certain steps

preparatory to practice-teaching may be taken. 1. The pupil-teacher may analyze the topic to be taught, noting essentials and incidentals, seeking the connections of the subject with the mental possessions of the pupils to be considered and the sequences from these points of contact to the knowledge to be gained under instruction. 2. Next, plans of lessons may be prepared and series of questions for teaching the given subjects. 3. Giving lessons to fellow pupil-teachers leads to familiarity with the mechanism of class work, such as calling, directing, and dismissing classes, gives the beginner ease and self-confidence, leads to careful preparation of lessons, gives skill in asking questions, and in the use of apparatus.

The practice-teaching should be in another school, preferably in a different building, and should commence with group-teaching in a recitation-room apart from the schoolroom. Actual teaching of small groups of children gives opportunity for the study of the child-mind in its efforts at reception and assimilation of new ideas, and shows the modifications in lesson plans that must be made to adapt the subject-matter to the child's tastes and activities. But the independent charge for a considerable time of a schoolroom with a full quota of pupils, the pupil-teacher and the children being much of the time the sole occupants of the room,— in short, the realization of ordinary school conditions, with the opportunity to go for advice to a friendly critic, is the most valuable practice; and no practice short of this can be considered of great value except as preparation for this chief form of preparatory practice. All this work should have its due proportion only, or evil may result. For example, lesson plans tend to formalism, to self-conceit, to work in few and narrow lines, to study of subjects rather than of pupils; lessons to fellow-pupils make one self-conscious, hinder the growth of enthusiasm in work, and are entirely barren if carried beyond a very few exercises; teaching groups of children for considerable time unfits the teacher for the double burden of discipline and instruction, to bear both of which simultaneously and easily is the teacher's greatest difficulty and most essential power.

A critic-teacher should be appointed to the oversight of two such pupil-teachers, each in charge of a schoolroom. The critic may also supervise one or more teachers practicing for brief periods daily with groups of children.

The pupil-teachers are now to emphasize practice rather than theory, to work under the direction of one who regards the interests of the children quite as much as those of the teacher-in-training. The critic must admit the principles of education and general methods taught by the teacher of methodology, but she may have her own devices and even special methods that need not be those of the teacher of methodology. No harm will come to the teachers-in-training if they learn that principles must be assented to by all, but that methods may bear the stamp of the personality of the teacher; that all things must be considered from the point of view of their effect upon the pupils; the critic maintaining the claims of the children, the teacher of methods conforming to the laws of mind and the science of the subjects taught. The critics must teach for their pupil-teachers and show in action the justness of their suggestions. In this sense they are model-teachers as well as critics.

The critic should, at the close of school, meet her pupil-teachers for a report of their experiences through the day: What they have attempted, how they have tried to do it, why they did so, and what success they gained. Advice as to overcoming difficulties, encouragement under trial, caution if need be, help for the work of to-morrow, occupy the hour. Above all, the critic should be a true friend, a womanly and cultivated woman, and an inspiring companion, whose presence is helpful to work and improving to personality.

Length of training-school course.

There are three elements which determine the time to be spent in a training school — the time given to academic studies, the time given to professional studies, and the time given to practice. The sum of these periods will be the time required for the training course. Taking these in the inverse order, let us consider how much time is required for practice work with pupils. The time given to lesson outlines and practice with fellow pupil-teachers may be considered a part of the professional study rather than of practice-teaching. The period of practice with pupils must not be too short, whether we consider the interests of the pupils or of the teachers-in-training. An effort is usually made to counteract the effect upon the children of a succession of crude efforts of teachers beginning practice by strengthening the teaching and supervision through the employment of a considerable number of model and supervisory teachers, and by dividing the pupils into small groups, so that much individual work can be done. These arrangements, while useful for their purpose, destroy to a considerable degree the usual conditions under which school work is to be done, and tend to render the teachers-in-training formal and imitative.

The practice room should be, as far as may be, the ordinary school, with the difficulties and responsibilities that will be met later. The responsibility for order, discipline, progress, records, reports, communication with parents and school authorities, must fall fully upon the young teacher, who has a friendly assistant to whom she can go for advice in the person of a wise and experienced critic, not constantly at hand, but constantly within reach.

Between the critic and the teacher-in-training there should exist the most cordial and familiar relations. These relations are based on the one hand upon an appreciation of wisdom and kindness, on the other, upon an appreciation of sincerity and effort. The growth of such relations, and the fruitage which follows their growth, require time. A half-year is not too long to be allotted for them. During this half-year experience, self-confidence and growth in power have been gained; but the pupil-teacher is still not ready to be set aside to work out her own destiny. At this point she is just ready for marked advance, which should be helped and guided. To remain longer with her critic friend may cause imitation rather than independence, may lead to contentment and cessation of growth. She should now be transferred to the care of a second critic of a different personality, but of equal merit. The new critic is bound by her duty and her ambition to see that the first half year's advancement is maintained in the second. The pupil-teacher finds that excellence is not all upon one model. The value of individuality impresses her. She gains a view of solid principles wrapped in diverse characteristics. Her own individuality rises to new importance, and the elements of a growth not at once to be checked start up within her. For the care of the second critic a second half year must be allowed, which extends the practice work with pupils through an entire school year. For the theoretical work a year is by general experience proven sufficient. The ideal training course is, then, one of two years' length.

Provision for the extended practice which is here recommended can be made only by city training-schools and by normal schools having connection with the schools of a city. To set apart a building of several rooms as a school of practice will answer the purpose only when there are very few teachers in training. In order to give each pupil-teacher a year of practice the number of practice rooms must equal the number of teachers to be graduated annually from the training-school, be the number ten, fifty, or five hundred. In any considerable city a school for practice will not suffice; many schools for practice must be secured. This can be done by selecting one excellent teacher in each of a sufficient number of school buildings, and making her a critic-teacher, giving her charge of two schoolrooms, in each of which is placed a pupil-teacher for training.

This insures that the training shall be done as nearly as may be under ordinary conditions, brings the pupil-teachers at once into the general body of teachers, makes the corps of critics a leaven of zeal, and good teaching scattered among the schools. This body of critics will uplift the schools. More capable in the beginning than the average teacher, led to professional study, ambitious for the best things, they make greater progress than they otherwise would do, and are sufficient in themselves to inspire the general body of teachers. For the sake of the pupil-teachers, and the children, too, this plan is best. Its economy also will readily be apparent. This plan has been tried for several years in the schools of Providence, with results fully equal to those herein claimed.

Tests of success.

The tests of success in practice-teaching are in the main those to be applied to all teaching. Do her pupils grow more honest, industrious, polite? Do they admire their teacher? Does she secure obedience and industry only while demanding it, or has she influence that reaches beyond her presence? Do her pupils think well and talk well? As to the teacher herself: Has she sympathy and tact, self-reliance and originality, breadth and intensity? Is she systematic, direct, and business-like? Is she courteous, neat in person and in work? Has she discernment of character and a just standard of requirement and attainment?

These are some of the questions one must answer before he pronounces any teacher a success or a failure.

Admission to a training school assumes that the pupil has good health, good scholarship, good sense, good ability, and devotion to the work of teaching. If all these continue to be exhibited in satisfactory degree and the pupil goes through the prescribed course of study and practice, the diploma of the school should naturally mark the completion of this work. If it appears on acquaintance that a serious mistake has been made in estimating any of these elements, then, so soon as the mistake is fairly apparent and is probably a permanent condition, the pupil should be requested to withdraw from the work. This is not a case where the wheat and the tares should grow together until the harvest at graduation day or the examination preceding it. With such a foundation continually maintained, it is the duty of the school to conquer success for each pupil.

Teaching does not require genius. Indeed, genius, in the sense of erratic ability, is out of place in the teacher's chair. Most good teachers at this close of the nineteenth century are made, not born; made from good material well fashioned. There is, however, a possibility that some idiosyncrasy of character, not readily discovered until the test is made, may rise between the prospective teacher and her pupils, making her influence over them small or harmful. Such a defect, if it exist, will appear during the practice-teaching, and the critic will discover it. This defect, on its first discovery, should be plainly pointed out to the teacher-in-training and her efforts should be joined with those of the critic in its removal.

If this effort be a failure and the defect be one likely to harm the pupils hereafter to be taught, then the teacher-in-training should be informed and requested to withdraw from the school. There should be no test at the close of the school course to determine fitness for graduation. Graduation should find the teacher serious in view of her responsibilities, hopeful because she has learned how success is to be attained, inspired with the belief that growth in herself and in her pupils is the great demand and the great reward.

Training of teachers for secondary schools.

Perhaps one-sixth of the great body of public school teachers in the United States are engaged in secondary work and in supervision. These are the leading teachers. They give educational tone to communities, as well as inspiration to the body of teachers.

It is of great importance that they be imbued with the professional spirit springing from sound professional culture. The very difficult and responsible positions that they fill demand ripe scholarship, more than ordinary ability, and an intimate knowledge of the period of adolescence, which Rousseau so aptly styles the second birth.

The elementary schools provide for the education

of the masses. Our secondary schools educate our social and business leaders. The careers of our college graduates, who mainly fill the important places in professional and political life, are determined largely by the years of secondary training. The college or university gives expansion and finish, the secondary school gives character and direction.

It should not be forgotten that the superintendents of public schools are largely taken from the ranks of secondary teachers, and that the scholarship, qualities, and training required for the one class are nearly equivalent to that demanded for the other.

Our high schools, too, are the source of supply for teachers in elementary schools. Hence the pedagogic influences exerted in the high school should lead to excellence in elementary teaching.

The superintendent who with long foresight looks to the improvement of his schools will labor earnestly to improve and especially to professionalize the teaching in his high school. The management which makes the high school an independent portion of the school system, merely attached and loftily superior, which limits the supervision and influence of the superintendent to the primary and grammar grades, is short-sighted and destructive.

There ought also to be a place and a plan for the training of teachers for normal schools. The great body of normal and training schools in the United States are secondary schools. Those who are to teach in these schools need broad scholarship, thorough understanding of educational problems, and trained experience. To put into these schools teachers whose scholarship is that of the secondary school and whose training is that of the elementary is to narrow and depress, rather than broaden and elevate.

If college graduates are put directly into teaching without special study and training, they will teach as they have been taught. The methods of college professors are not in all cases the best, and, if they were, high school pupils are not to be taught nor disciplined as college students are. High school teaching and discipline can be that neither of the grammar school nor of the college, but is *sui generis*. To recognize this truth and the special differences is vital to success. This recognition comes only from much experience at great loss and partial failure, or by happy intuition not usually to be expected, or by definite instruction and directed practice. Success in teaching depends upon conformity to principles, and these principles are not a part of the mental equipment of every educated person.

These considerations and others are the occasion of a growing conviction, widespread in this land, that secondary teachers should be trained for their work even more carefully than elementary teachers are trained. This conviction is manifested in the efforts to secure normal schools adapted to training teachers for secondary schools, notably in Massachusetts and New York, and in the numerous professorships of pedagogy established in rapidly increasing numbers in our colleges and universities.

The training of teachers for secondary schools is in several essential respects the same as that for teachers of elementary schools. Both demand scholarship, theory, and practice. The degree of scholarship required for secondary teachers is by common consent fixed at a collegiate education. No one — with rare exceptions — should be employed to teach in a high school who has not this fundamental preparation.

It is not necessary to enter in detail into the work of theoretical instruction for secondary teachers. The able men at the head of institutions and departments designed for such work neither need nor desire advice upon this matter. And yet for the purposes of this report it may be allowable to point out a plan for the organization of a secondary training school.

Let it be supposed that two essentials have been found in one locality, (1) a college or university having a department of pedagogy and a department of post-graduate work; (2) a high school, academy, or preparatory school whose managers are willing to employ and pay a number of graduate students to teach under direction for a portion of each day. These two conditions being met, we will suppose that pedagogy is offered as an elective to the college seniors.

Two years of instruction in the science and art of teaching are to be provided; one, mostly theory with some practice, elective during the senior year; the other, mostly practice with some theory, elective for one year as post-graduate work.

During the senior year is to be studied: —

The science of teaching.

The elements of this science are: —

I. Psychology in its physiological, apperceptive, and experimental features. The period of adolescence here assumes the prominence that childhood has in the psychological study preparatory to teaching in lower schools. This is the period of beginnings, the beginning of a more ambitious and generous life, a life having the future wrapped up in it; a transition period, of mental storm and stress, in which egoism gives way to altruism, romance has charm, and the social, moral, and religious feelings bud and bloom. To guide youth at this formative stage, in which an active fermentation occurs that may give wine or vinegar according to conditions, requires a deep and sympathetic nature, and that knowledge of the changing life which supplies guidance wise and adequate.

II. Methodology: A discussion of the principles of education and of the methods of teaching the studies of the secondary schools.

III. School economy should be studied in a much wider and more thorough way than is required for elementary teachers. The school systems of Germany, France, England, and the leading systems of the United States should also be studied.

IV. History of education, the tracing of modern doctrine back to its sources; those streams of influence now flowing and those that have disappeared in the sands of the centuries.

V. The philosophy of education as a division of an all-involving philosophy of life and thought in which unity is found.

The art of teaching.

This includes observation and practice. The observation should include the work of different grades and of different localities, with minute and searching comparison and reports upon special topics. How does excellent primary work differ from excellent grammar grade work? How do the standards of excellence differ between grammar grades and high school grades? Between high school and college work? What are the arguments for and against coeducation in secondary schools, as determined by experience? What are the upper and lower limits of secondary education as determined by the nature of the pupil's efforts?

In the college class in pedagogy much more than in the elementary normal school can the class itself be made to afford a means of practice to its members. Quizzes may be conducted by students upon the chapters of the books read or the lectures of the professors. These exercises may have for their object review, or improved statement, or enlarged inference and application, and they afford an ample opportunity to cultivate the art of questioning, skill in which is the teacher's most essential accomplishment.

The head of the department of pedagogy will, of course, present the essential methods of teaching, and the heads of other departments may lecture on methods pertaining to their subject of study; or secondary teachers of known success may still better present the methods now approved in the several departments of secondary work.

Post-graduate year.

To those graduates who have elected pedagogy in their senior year may be offered the opportunity of further study in this department, with such other post-graduate work as taste and opportunity permit. From those selecting advanced work in pedagogy the board in charge of the affiliated secondary school should elect as many teachers for its school as are needed, employing them for two-thirds time at one-half the usual pay for teachers without experience. Under the professor of pedagogy of the college, the principal, and the heads of departments of the school these student-teachers should do their work, receiving advice, criticism, and illustration as occasion requires. The time for which they are employed would provide for two hours of class work and about one hour of clerical work or study while in charge of a schoolroom. These student-teachers should be given abundant opportunity for the charge of pupils while reciting or studying, at recess and dismissals, and should have all the responsibilities of members of the faculty of this school. Their work should be inspected as frequently as may be by the heads of the departments in which they teach, by the principal of the school, and by the professor of pedagogy. These appointments would be virtually fellowships with an opportunity for most profitable experience.

In the afternoon of each day these students should attend to college work and especially to instruction from the professor in pedagogy, who could meet them occasionally with the heads of the departments under whose direction they are working.

On Saturdays a seminary of two hours' duration might be held, conducted by the professor of pedagogy and attended by the student-teachers and the more ambitious teachers of experience in the vicinity. These seminaries would, doubtless, be of great profit to both classes of participants, and the greater to each because of the other. (Such a training school for secondary teachers in connection with Brown University and the Providence high school is contemplated for the coming year.)

It will not be needful to specify further the advantages to the student-teachers. The arrangement like wise affords advantage to the affiliated school, especially in the breadth of view this work would afford to the heads of departments, the intense desire it would beget in them for professional skill, the number of perplexing problems which it would force them to attempt the solution of.

The visits of the professor of pedagogy, and the constant comparison he would make between actual and ideal conditions, would lead him to seek the improvement, not only of the students in practice, but of the school as a whole.

When several earnest and capable people unite in a mutual effort to improve themselves and their work, all the essential conditions of progress are present.

Horace S. Tarbell, Chairman,
Superintendent of Schools, Providence, R. I.
Edward Brooks,
Superintendent of Schools, Philadelphia, Pa.
Thomas M. Balliet,
Superintendent of Schools, Springfield, Mass.
Newton C. Dougherty,
Superintendent of Schools, Peoria, Ill.
Oscar H. Cooper,
Superintendent of Schools, Galveston, Tex.

THE CITRUS FRUITS.—(I.)

BY CLARABEL GILMAN.

Specimens: **For this study of fruits an orange is needed for each child, a lemon for every two children, some large pieces of preserved citron, the more the better, and a few pickled limes. The oranges should be of as many different varieties as possible, so this is especially a subject for winter study. Every other orange and lemon should be kept uncut to serve as models for the drawings.**

(1) ***Describe orange.***

(*a*) Color: in different varieties; more beautiful than other fruits? Compare with apple, pear, and peach. Greater richness and depth of color in orange, and greater delicacy of tints in peach?

(*b*) Shape: perfectly round? where flattened? How tell apex from base? (Know base by bit of stem with calyx adhering to it.) Examine outline as held up to light: same on opposite sides? reason of difference, if any is found? (Crowding of fruits against one another seen on orange trees in bloom, or in a large picture of a branch) Shape of different varieties of orange? (Figs. 1–3.)

(*c*) Size: girth of good specimens of each variety. (Measure diameter later in lesson, on cross sections cut for drawing. It will be distracting to attempt it at this stage.)

(*d*) Rind: rough or smooth? shiny? Observe pits,

also minute dots, which are sometimes of two or three sizes. Cut *peel* alone, in quarters, and strip pieces down, leaving them attached at base; on cut edge see that dots are tops of little globular sacs sunk in the peel; in some places notice that largest sacs are at bottom of pits, and smaller ones arranged around them with some regularity. These sacs are oil-glands; use? To find one use, try taste and odor of rind. (Before orange ripens, the oil has a bitter and biting taste that it loses at maturity.) Two layers of peel: outer tough, inner softer, white, not unlike pith. Take off peel entirely; part of inner layer clings to membrane covering pulp, may be stripped off with knife in broad bands from base to apex of fruit. (Thin peel belongs to finest varieties.)

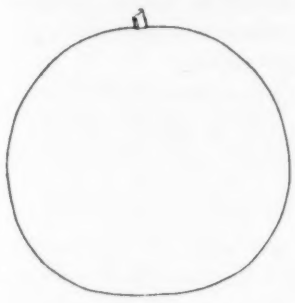

Fig. 1

Fig. 1. Florida orange, very round and perfect in shape; one half natural size.

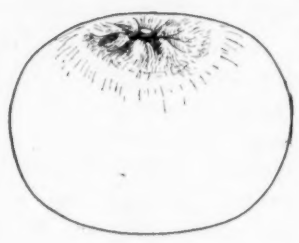

Fig. 3

Fig. 3. Mandarin orange from Florida, showing knobbed surface around stem; one half natural size.

(*e*) Pulp: beautiful golden globe covered with delicate white membrane; sections marked off by sh allow grooves creamy white column of pith in centre. Separate pulp into sections without breaking their covering; how many? (In our common sweet orange usually from nine to eleven in number.) Strip membrane from one side of a section; see layers of little sacs filled with juice, and one or more seeds. Taste.

(*f*) Seeds: position on inner margin of pulp sections; color yellowish white (in common orange); length; variously marked with ridges. To explain ridges note how seed lies with reference to pulp and membrane, and see that on one or more sides it is flattened where it lay against membrane, while it has ridges wherever it came in contact with pulp; when and how were these marks made? (As the seed grows its epidermis becomes thickened, uniformly where it rests against a membrane, and in ridges where it finds little spaces between juice-sacs.) Soak seed in warm water for twenty-four hours: see change in outer coat. (The thickening substance in the epidermis is changed to mucilage, and envelops the seed in a layer of jelly.) Shape irregularly oblong or triangular; rhaphe, or continuation of the seedstalk, usually traceable as a ridge from attachment of seed at pointed end around to opposite end. Remove tough outer coat, and see delicate light brown inner coat covered by whitish, satiny layer, and brown cap laid across broad end of seed, to which branches of rhaphe give appearance of little brown leaf. Open kernel of seed, and find from two to four embryos with thickened cotyledons and tiny caulicle, and perhaps as many more imperfect ones.

It is probably unnecessary to add that this minute work on the seed can be done by pupils only after they are accustomed to observation and the use of magnifying glasses, but will be extremely interesting to the teacher who has time for it.

(2) *Compare orange and lemon.*

(*a*) Color; (*b*) shape and size; (*c*) peel; (*d*) pulp; (*e*) seeds; (*f*) taste.

The points of resemblance and difference between the orange and the lemon are so readily seen by following the directions given for the study of the orange that it is unnecessary to do more than indicate them. It will be noticed that the peel of the lemon does not so readily separate from the pulp, and as we all know, the juice is much more strongly acid. The lemon seldom grows to the size of the largest oranges.

(3) *Describe lime, noting color, shape, etc. as before, and compare with orange and lemon.*

Pickled limes will give a very good idea of the fruit. Selected ones in glass jars are a beautiful clear yellow and as large as moderate sized lemons. They are rounder than lemons and the projection at the apex is smaller and shorter. The peel does not differ from that of the lemon, though the oil-glands are less easily seen than in fresh fruit. The pulp, at least in pickled limes, separates from the peel more readily than that of the lemon. The seeds, though much less slippery to the touch than those of the orange, have a remarkably soft, juicy appearance as if their outer coat were the same kind of tissue as the juice-sacs. In taste the peel of the lime is very much like that of the lemon, while the pulp is much less acid, but has a bitter-aromatic flavor that is both refreshing and appetizing.

(4) *Describe citron, and compare with other fruits studied.*

(*a*) Color: dark greenish brown; changed in preserving? (Natural color greenish yellow.)

(*b*) Shape: oblong, with a depression around the stem; ridged and furrowed near stem. Size: length; diameter.

(*c*) Peel: rough, very thick; wherever sugar is rubbed off marked with innumerable pits, like pin-holes, evidently oil-glands.

(*d*) Pulp and seeds: any present? Examine hollow inside citron to see whether pulp could have been thick. (Pulp is thin, adheres to peel, and contains little juice.)

(*e*) Taste: sweet and aromatic; aroma of outer rind much like that of mandarin orange.

In the fresh citron the inner rind, which forms the greater part of the fruit, is white, tender, and fleshy, and adheres to the thin, nearly dry pulp, which tastes like a lemon, but is less acid. Thin sections of the outer rind of candied citron examined in the sunlight through a magnifying glass give beautiful views of the oil-glands as dots, clear spaces, or little cavities filled with sugar.

(5) *Classification.*

All these fruits have what? (Thick rind, numerous oil-glands, aromatic oil, pulp with more or less acid juice.) They are berries with a thick rind, and their technical name is hesperidium, from the golden apples of the Hesperides.

(6) *Draw orange and lemon, and cross section of orange*

Simple outline drawings like the figures in this lesson are enough. When the oranges are cut for the cross sections the diameter can be measured to complete the study of their size.

If it is found necessary to divide this lesson into two parts, giving only the orange and the lemon at one time, the drawings should be made when the study of those fruits is finished.

The above completes the outline of the lesson; all that follows is of the nature of appendix, to be skipped or not, as the reader chooses. These notes, however, partly gathered from books, partly the record of my own observations, have so much interest for me that I venture to think they may have some at least for others.

To get an idea of the variations in shape and size among oranges alone, of which there are not less than two hundred varieties, one should consult the atlas of plates accompanying Bonavia's work

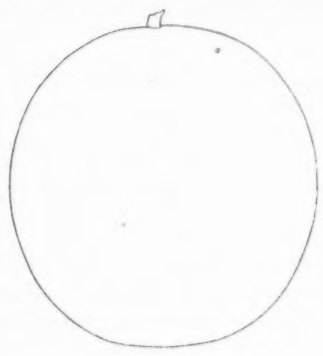

Fig. 2

Fig. 2. Large Florida orange, somewhat oblong in shape; one half natural size. This had a much thicker rind than that outlined in Fig. 1.

Fig. 4

Fig. 4. Large, thick-skinned Florida lemon; one half natural size.

on The Cultivated Oranges and Lemons of India and Ceylon, in which are figured all shapes and sizes from a giant pear-shaped fruit ten inches long, and a huge one grooved like a melon and with a girth of twenty-eight inches, to others of smaller size with the lengthened apex of a lemon, and the tiny, nearly globular dwarf orange of China, that grows on a tree only two feet high.

One of the most beautiful of these varieties is the Tangerine or Mandarin orange, prized from the earliest times in China, and so called perhaps because too expensive to be had by any except mandarins or grandees. If it is possible to obtain a few of these oranges, they will add greatly to the interest of the lesson. Other names given them by dealers are "kid-glove orange" and "tomato orange." The dealers are also likely to say that the yellow one of these oranges is the Mandarin, and the deep orange-red one the Tangerine, but they are only two varieties of the same orange. The bit of stem that can be pulled out of the knobbed elevation at the base of the fruit has the five-lobed calyx still attached to it and above that the cushion-shaped disk on which the orange rests. These may often be seen on common oranges too, but not always so clearly defined. The calyx attached to one Tangerine was still green, and oil-glands were plainly visible in it. When the stem is removed, an exquisite little wheel of fibro-vascular bundles is seen, as in other varieties, one for each carpel of the fruit. This orange is instantly recognized not only by its shape but also by the pleasant aromatic fragrance of the thin peel, which is saturated with oil from the multitude of glands that it contains. The inner layer of the peel consists of very loose, spongy tissue traversed by numerous fibres, which easily break away from the pulp. The cobweb lacework of the central column is also easily pulled out leaving the beautifully rounded carpels of the pulp surrounding a hollow space, as represented in Fig. 5. The seeds of the Mandarin are rounder than those of the common orange and less marked by the pressure of the juice-sacs, but show the same brown cap at the chalaza, or point where the coats join the kernel of the seed, and also have several embryos. Fig. 6 represents the delicate pea-green kernel of such a seed, on which are seen parts of four embryos; on opening the seed, however, four more tiny germs were revealed, exquisite bits of bright green tissue. On each of these eight embryos two cotyledons and a very short caulicle could be made out. In this orange the juice-sacs are short, broad, and closely packed, while the juice is sweet and agreeably flavored. The Tangerine is a favorite dessert fruit on account of its delicate flavor, its beauty of shape and color, and the ease with which the sections separate.

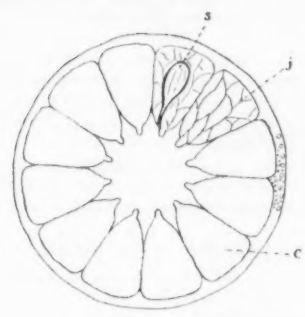

Fig. 5

Fig. 5. Cross section through centre of mandarin orange, showing hollow space that in common orange is filled by column of pith; one half natural size; *c*, carpel; *j*, juice-sacs; *s*, seed. Oil-glands are seen as dots on the rind at the right.

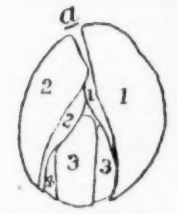

Fig. 6.

Fig. 6. Mandarin orange seed with coats removed, magnified: parts of four embryos are shown, numbered in the order of their size, cotyledons of the same embryo bearing the same number. When the seed was opened by pressure with the blade of a penknife downward from *a*, four more embryos were found packed in between the first four, one of them very minute. Orange seeds vary so much in the number, shape, and arrangement of the embryos that no one should expect to find another like this.

The outer layer of orange peel contains orange-red color bodies, which give it its brilliant hue. The pulp of the orange consists of juice vesicles, which are small fibrous sacs filled with large cells. These cells contain a sap that, like the rind, is colored by small orange-red color-bodies.

If orange seeds are to be planted, they must be kept moist. One or two of the embryos in the seed always take the lead absorbing most of the endosperm, while the others are pushed to the wall and make but little growth. The orange seed is not the only one that has several embryos, a number of Monocotyledons and of other Dicotyledons having the same peculiarity.

A point of interest to the advanced student is seen in a longitudinal section of the lime. The seed, which is pendulous and anatropous, hangs obliquely from the central axis in such a way as to bring the micropyle, or orifice, on the upper side of the apex of the seed and facing the apex of the fruit in just the position in which the pollen tube can most easily find and enter the tiny opening. This is a plain verification of the recent theory that the very common inverted ovule is a contrivance for insuring fertilization. This can be seen more plainly in the lime than in fresh fruits, because the tissues have been hardened by the pickling, so that the seed remains attached to the placenta.

WHAT WE DO.

ADAPTED FROM HENRY ABBEY.

[One of the oldest pupils should take the part of questioner. The others should respond in a spirited manner.]

Questioner.— What do we plant when we plant the tree?

1. We plant the *ship* which will cross the sea.
2. We plant the *mast* to carry the sails.
3. We plant the *planks* to withstand the gales,—
   The keel, the keelson, and beam and knee.

All.— We plant the *ship* when we plant the tree.

Questioner.— What do we plant when we plant the tree?

1. We plant the houses for you and me.
2. We plant the rafters, the shingles, the floors.
3. We plant the studding, the lathes, the doors,
   The beams and siding, all parts that be.

All.— We plant the house when we plant the tree.

Questioner.— What do we plant when we plant the tree?

1. A thousand things that we daily see.
2. We plant the spire that out-towers the crag.
3. We plant the staff for our country's flag.
   We plant the shade, from the hot sun free.

All.— We plant all these when we plant the tree.

O Painter of the fruit and flowers!
  We thank thee for thy wise design,
Whereby these human hands of ours
  In nature's garden work with thine.

Give fools their gold; give knaves their power;
  Let fortune's bubbles rise and fall;
Who sows a field, or trains a flower
  Or plants a tree, is more than all. — *Whittier.*

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A. E. WINSHIP, Editor.
W. E. SHELDON, Manager of Advertising Dept.

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BOSTON & CHICAGO, MARCH 14, '95,

Boston has recaptured Miss Sarah L. Arnold.

Harvard Teachers' Association wisdom will be served up next.

Ontario Educational Association and Dominion Educational Association unite in a grand meeting at Toronto, April 16–18.

When did a schoolmaster ever do a more creditable piece of work than Mr. George H. Martin, of Boston, in his "Evolution of the Massachusetts Public School System," in Appleton's "International Education Series"? It is reliable history, a philosophical study, a literary gem. It represents ripe scholarship, professionally; keen, analytic power and literary genius.

A state truant officer is talked of in Massachusetts.

COLORADO, SALT LAKE, AND YELLOWSTONE.

Go to Denver by all means, and beyond if possible. The National Educational Association, which meets at Denver, will have "bottom rates." For less than $100 you can go to Colorado, attend the meeting, spend a day at Manitou, another at Colorado Springs, and make one of the most delightful tours through the Rocky mountains and parks, going to Denver and returning in Pullman cars, living in first-class style. Salt Lake and vicinity can be added at comparatively slight cost. For $200 you can take the Colorado trip entire, — Salt Lake, the Yellowstone park, making the entire five-and-a-half days' excursion all through the park, returning via St. Paul and Minneapolis, Niagara Falls, etc. First-class accommodations everywhere.

This means a grand excursion through Massachusetts, a bit of Vermont, New York, a bit of Pennsylvania, Ohio, Indiana, Illinois, Iowa, Nebraska, Colorado, Wyoming, Utah, Idaho, Montana, Dakota, Minnesota, Wisconsin, and a bit of Canada.

This means the grandest views of prairies, Pike's Peak, cañons, Garden of the Gods, Rocky mountains, natural parks, Great Salt lake, Mormon tabernacle, Utah mountains, Garfield beach, geysers, Hot springs, and Yellowstone glories; Montana ranches, Dakota wheat fields, etc.

It means more American geography than the same money can bring in any other way. Tickets are good returning till September.

The expense can be greatly reduced by a reduction of luxuries. The JOURNAL is ready to advise regarding the trips, so that teachers may get the most for their money. If you have but $75, the JOURNAL can tell you how to go to Colorado comfortably, attend the meetings, go to Manitou, Colorado Springs, take a tour through the Rockies, and visit Niagara Falls returning.

Similar reduction can be made in the Salt Lake and Yellowstone trips.

The return trip from Colorado or Salt Lake can be made via Kansas City and St. Louis. From St. Louis it is optional to return via Washington and New York, or via Detroit, Niagara Falls, and Thousand Islands, without appreciable extra expense.

COMMERCIAL CORRELATION.

The JOURNAL OF EDUCATION has been duly notified by the educational monthly of which Nicholas Murray Butler is editor, that Dr. Butler calls the attention of said monthly to the fact that the JOURNAL OF EDUCATION proposes to make itself liable, by publishing the Report of the Fifteen, to the publication of which said monthly has the *exclusive right.*

Nicholas Murray Butler is, *i. e.*, has been, up to this time, the educational reformer preëminent; the educational Dr. Parkhurst of New Jersey and New York city and state, and the educational wing of the famous Committee of Seventy. He has stood related to educational jobbery as Dr. Parkhurst has to police corruption.

The National Educational Association, of which Dr. Butler is president, appointed a Committee of Fifteen and *appropriated money* from the treasury of said association for the expenses of said committee. This money belongs to the teachers of the United States, a fund of nearly $50,000 having accumulated from the membership fees of the rank and file of the teachers of the country.

This committee was composed of fourteen conscientious, devoted men of educational conviction, and of a chairman peculiarly related to said Butler.

Nicholas Murray Butler is the editor of the educational monthly; while the chairman of the Committee of Fifteen is his first editorial lieutenant, and said chairman of the Committee of Fifteen and lieutenant to the said Butler was president of the Department of Superintendence, to which said chairman's committee reported at Cleveland.

This chairman appears not to have borne any conspicuous part in the professional work of the committee, as did President Eliot, as chairman of the Committee of Ten; as did Messrs. Harris, Draper, and Tarbell, as chairmen of the sub-committees of the Fifteen. It now looks as though he was chairman for publishing purposes.

The announcements of the Cleveland meeting and of the forthcoming Report of Fifteen were, apparently, exclusives of the monthly of Nicholas Murray Butler and his lieutenant, who was also chairman and president. The JOURNAL, wholly unsuspectingly, wrote said editorial lieutenant, chairman, and president, expressing regrets that the JOURNAL had not duly noticed the forthcoming meeting and report, simply because it had received no circular of information, as had been the custom for many years. It did not take long to discover the fact that all information was expected to appear first in said monthly, and that all other editors ought gratefully to accept the crumbs that fell from that table. The JOURNAL accepted the situation without a murmur.

In due course of time the JOURNAL received a pretentious announcement that said monthly would publish in full in the March number all of these reports. One of these chairmen requested said lieutenant-chairman-president to send to the JOURNAL a copy of his part of the report, whereat said lieutenant-chairman-president informed the JOURNAL that it would receive it, as would other parties, through said monthly in due course of time, after the meeting at Cleveland.

At Cleveland, the president, chairman, and editorial lieutenant made frequent announcements to the convention that the report would be for sale at thirty-five cents a copy.

The JOURNAL had no grievance. There was no sulking or whining. The JOURNAL and its editor did everything that suggested itself to secure a large meeting. From first to last, there has been no criticism, public or private, by the editor.

After the meeting the JOURNAL continued to boom the Report of the Fifteen. After publishing these reports it put them in pamphlet form that teachers might have them at slight cost. It never for a moment occurred to the office that, in addition to all the advantage in time and exclusiveness of convention advertising, Nicholas Murray Butler and his lieutenant would also claim *exclusive right* to publish this report, which had been made by public-spirited educators whose expenses connected therewith had been provided for by the National Educational Association, of which said Butler is president.

Imagine the surprise when notified that the legal rights of their monthly had been invaded, being duly "protected under the copyright of the March number" of said monthly. The claim seems to be that whatever appears within those sacred covers becomes their own.

In the interest of common morality, it is to be hoped that the Ten Commandments may never appear therein, lest thereby the world without would lose all right to apply the same at less than thirty-five cents a copy.

If the JOURNAL had mistrusted that Nicholas Murray Butler and his lieutenant had suspected that they could gain the exclusive right to publish at thirty-five cents a copy the report prepared by the lieutenant's committee at the expense of the association of which Nicholas Murray Butler is president, of course there would have been no thought of furnishing it to the teachers at fifteen cents a copy.

The picture of the president of the National Educational Association, the educational Dr. Parkhurst for the prevention of educational jobbery, and editor of the said monthly, calling the attention of this monthly to the heinous crime of the JOURNAL OF EDUCATION in infringing upon the rights of said monthly is one to be remembered. His speech upon accepting the presidency of the National has new interest in the light of subsequent events.

If the monthly of Messrs. Butler and Maxwell owns this report of Maxwell's committee read at Maxwell's Department, then Butler's Association has no right to print in the "Volume of Proceedings" of 1895, as has been the custom, the "Proceedings of the Department" without the consent in writing of said monthly of Messrs. Butler and Maxwell.

It will be an interesting correspondence, which will, of course, appear in the "Volume of Proceedings," in which Maxwell's Department asks Butler's Association to ask Butler and Maxwell's monthly to allow Butler's Association to print the "Proceedings" of Maxwell's Department.

As an example of Commercial Correlation industriously applied on reform lines this is "immense." Wonder if it is copyrighted?

There is in all this a fine touch of modern educational reform ethics which the common man does not easily distinguish, and the JOURNAL moves the appointment of a "Committee of Twenty" by Butler's Association to pass upon three points:—

First.— Is the Hegelian ethics or the Herbartian psychology responsible for the development of that choice strain of virtue by which the monthly of Butler and Maxwell had the benevolence to copyright and claim the ownership — exclusive — of the grandest utterance of the greatest educational thinker of modern times?

Second.— If Messrs. Butler and Maxwell should print a chromo of a rainbow in their monthly, would they have exclusive ownership of the rainbow?

Third. — In which dictionary did they find the definition, "Public office is a private snap"?

Dissent from Dr. Harris' Report.

BY JAMES M. GREENWOOD, OF KANSAS CITY.

I dissent from the majority report of the Committee in regard to the following points:---

Arithmetic.

1. As to fractions: In teaching arithmetic there does not exist any greater difficulty in getting small children to grasp the nature of the fraction as such than in getting them to grasp the idea of the simpler whole numbers. It is true that the fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, etc., as symbols, are a little more complex than are the single digits; but as to the real meaning, when once the fractional idea has been properly developed by the teacher and the significance of the idea apprehended by the pupil, it is as easily understood as any other simple truth. Children get the idea of half, third, or quarter of many things long before they enter school, and they will as readily learn to add, subtract, multiply, and divide fractions as they will whole numbers. In using fractions they will draw diagrams and pictures representing the processes of work as quickly and easily as they illustrate similar work with integers. It is, of course, assumed that the teacher knows how to teach arithmetic to children, or rather, how to teach the children how to teach themselves. There is really no valid argument why children in the second, third, and fourth years in school should not master the fundamental operations in fractions. Not only this, they will put the more common fractions into the technique of percentage, and do this as well in the second and third grades as at any other time in their future progress. There is only one new idea involved in this operation, and that consists in giving an additional term---per cent.---to the fractional symbol. When one number is a part of another, it may be regarded as a fractional part or as such a per cent. of it. A great deal of percentage is thus learned by the pupils early in the course. Children are not hurt by learning. Standing still and lost motion kill.

Every recitation should reach the full swing of the learner's mind, including all his acquisitions on any given topic. But if the teaching of fractions be deferred, as it usually is in most schools, the time may be materially shortened by teaching addition and subtraction of fractions together. This is simple enough if different fractions having common denominators are used at first, such as $\frac{6}{7} + \frac{5}{7} = ?$, and $\frac{6}{7} - \frac{5}{7} = ?$ Then the next step, after sufficient drill on this case, is to take two fractions (simple) of different units of value, as $\frac{1}{3} + \frac{1}{4} = ?$, and $\frac{1}{2} - \frac{1}{3} = ?$ Multiplication and division may be treated similarly.

In decimals, the pupil is really confronted by a simpler form of fractions than the varied forms of common fractions.

Devices and illustrations of a material kind are necessary to build up in the pupil's mind at the beginning a clear concept of a tenth, etc., etc., and then to show that one-tenth written as a decimal is only a shorthand way of writing $\frac{1}{10}$ as a common fraction, and so on. He sees very soon that the decimal is only a shorthand common fraction, and this notion he must hold to. This is the vital point in decimals. The idea that they can be changed into common fractions and the reverse at will establishes the fact in the pupil's mind that they are common fractions and not uncommon ones. Fixing the decimal point will, in a short time, take care of itself.

In teaching arithmetic the steps are: (1) developing the subject till each pupil gets a clear conception of it; (2) necessary drill to fix the process; (3) connecting the subject with all that has preceded it; (4) its applications; (5) the pupil's ability to sum up clearly and concisely what he has learned.

2. As to abridgment: Under this head, I hold that a course in arithmetic, including simple numbers, fractions, tables of weights and measures, percentage, and interest, and numerical operations in powers, does not fit a pupil to begin the study of algebra. That while he may carry the book under his arm to the schoolroom, he is too poorly equipped to make headway on this subject, and instead of finishing up algebra in a reasonable length of time, he is kept too long at it, with a strong probability of his becoming disgusted with it.

There are subjects, however, in the common school arithmetic that may be dropped out with great advantage, to wit, all but the simplest exercises in compound interest, foreign exchange, all foreign moneys (except reference tables of values), annuities, alligation, progression; and the entire subjects of percentage and interest should be condensed into about twenty pages.

Calcellation, factoring, proportion, evolution, and involution should be retained. Cancellation and factoring should be strongly emphasized, owing to their immense value in shortening work in arithmetic, algebra, and in more advanced subjects. Some drill in the Metric System should not be omitted.

3. As to mental arithmetic: Till the end of the fourth year the pupil does not need a text-book of mental arithmetic. So far his work in arithmetic should be about equally divided between written and mental. At the beginning of the fifth year, in addition to his written arithmetic, he should begin a mental arithmetic and continue it three years, reciting at least four mental arithmetic lessons each week. The length of the recitation should be twenty minutes. A pupil well drilled in mental arithmetic at the end of the seventh year, if the school age begins at six, is far better prepared to study algebra than the one who has not had such a drill. There are a few problems in arithmetic that can be solved more easily by algebra than by the ordinary processes of arithmetic, but there are many numerical problems in equations of the first degree that can be more easily handled by mental arithmetic than by algebra. To attack arithmetical problems by algebra is very much like using a tremendous lever to lift a feather. Those who have found a great stumbling-block in arithmetical "conundrums" have, if the inside facts were known, been looking in the wrong direction. A deficiency of "number-brain-cells" will afford an adequate explanation.

4. Rearrangement of subjects: There should be a rearrangement of the topics in arithmetic so that one subject naturally leads up to the next. As an illustration, it is easily seen that whole numbers and fractions can be treated together, and that with U. S. money, when the dime is reached, is the proper time to begin decimals, and that when a "square" in surface measure first comes up, the next step is the square of a number as well as its square root, and that solid measure logically lands the learner among cubes and cube-roots. When he learns that 1728 cubic inches make one cubic foot he is prepared to find the edge of the cube. What is meant here is pointing the way to the next above. All depends upon the teacher's ability to lead the pupil to see conditions and relations. My contention is that truth, so far as one is capable of taking hold of it when it is properly presented, is always a simple affair.

5. As to algebra: If algebra be commenced at the middle of the seventh year, let the pupil go at it in earnest, and keep at it till he has mastered it. Here the best opportunities will be afforded him to connect his algebraic knowledge to his arithmetical knowledge. He builds the one on top of the other. The skillful teacher always insists that the learner shall establish and maintain this relationship between the two subjects. To switch around the other way appears to me to be the same as to omit certain exercises in the common algebra, because they are more briefly and elegantly treated in the calculus. It is admitted that a higher branch of mathematics often throws much light on the lower branches, but these side-lights should be employed for the purpose of leading the learner onward to broader generalizations. Unless one sees the lower clearly, the higher is obscure. Build solidly the foundation on arithmetic --- written and mental --- and the higher branches will be more easily mastered and time saved.

History of the United States.

In teaching this branch in the public schools, there does not appear, so far as I can see, any substantial reason why the pupils should not study and recite the history of the Rebellion in the same manner that they do the Revolutionary War. The pupils discuss the late war and the causes that led to it with an impartiality of feeling that speaks more for their good sense and clear judgment than any other way by which their knowledge can be tested. They may not get hold of all the causes involved in that conflict, but they get enough to understand the motives which caused the armies to fight so heroically, and why the people, both North and South, staked everything on the issue. Just as the men who faced each other for four years and met so often in a death grapple will sit down now and quietly talk over their trials, sufferings, and conflicts, so do their children talk over these same stirring scenes. They, too, so far as my experience extends, are singularly free from bitterness and prejudice. It is certainly a period of history that they should study.

The spelling-book.

In addition to the "spelling-lists," I would supplement with a good spelling-book. So far, no "word-list," however well selected, has supplied the place of a spelling-book. All those schools that threw out the spelling-book and undertook to teach spelling incidentally or by word-lists failed, and for the same reason that grammar, arithmetic, geography, and other branches cannot be taught incidentally as the pupil or the class reads Robinson Crusoe, or any similar work. It is an independent study and as such should be pursued.

BY CHARLES B. GILBERT, OF ST. PAUL.

While affixing my signature to the report of this Committee, as expressing substantial agreement with most of its leading propositions, I beg leave also to indicate my dissent from certain of its recommendations and to suggest certain additions which, in my judgment, the report requires.

1. There are other forms of true correlation which should be included with the four mentioned in the first part of the report and which should be as clearly and fully treated as are these four.

The first is that form of correlation which is popularly understood by the name, and which is also called by some writers concentration, co-ordination, unification, and alludes in general to a division of studies into content and form; by content meaning that upon which it is fitting that the mind of the child should dwell, and by form the means or modes of expression by which thoughts are communicated. Or, it may be thus expressed: The true content of education is (1), philosophy or the knowledge of man as to his motives and hidden springs of action indicated in history and literature, and (2) science, the knowledge of nature, and its manifestations and laws. Its form is art, which is the deliberate, purposeful, and effective expression to others of that which has been produced within man by contact with other men and with nature, and is commonly referred to as divided into various arts, such as reading, writing, drawing, making, and modeling. The relation of content and form is that of principle and subordinate, the latter receiving its chief value from the former. In a true education they are so presented to the mind of the child that he instinctively and unconsciously grasps this relation and is thereby lifted into a higher plane of thinking and living than if the various arts are taught, as they too commonly are, without reference to a noble content. This relation of form to content is vgauely referred to in the report, but nowhere definitely treated. It seems to me that it is a true form of correlation, and, as such, deserves special and definite treatment. Moreover, it is at present much in the minds of the teachers of this country, often in forms that are misleading and harmful. The fact that it adds the important element of interest to the dry details of common school life makes it especially attractive to progressive and earnest teachers, and this Committee should recognize its importance and make such an utterance upon it as will guide the average teacher to a clear comprehension of its meaning and to a wise use of it in the schoolroom.

Second, there is a still higher form of correlation which is definitely referred to later in the report as that "of the several branches of human learning in the unity of the spiritual view furnished by religion to our civilization." This in the report is assigned absolutely to the province of higher education. While I do not wish to dissent wholly from this view, since it is doubtless true that this higher unity cannot be comprehensively stated for the use of a child, yet a wise teacher can so present subjects to even a young child that a sense of the unity of all knowledge will, to a certain degree, be unconsciously developed in his mind. In regard to certain of the great divisions of human knowledge, this relation is so evident that they cannot be properly presented at all unless the relation be made clear. Such studies are history and geography.

2. The recommendations upon the subject of language should be broadened to cover the production of good English by the child himself, with the suggestion of suitable topics and proper methods. This report confines itself to the absorptive side of education and ignores that development of power over nature, man, and self, which comes from free exercise of faculties and free expression of thought. The study of language as something for the child to use himself, the great means by which he is to assert his place in civilization, and exert his influence for good, is nowhere referred to except in the vaguets way. This statement in regard to language applies almost equally well to drawing, and here is made evident the importance of the form of correlation to which I have just referred. The proper material for the training of the child in expression is that which is furnished by the study of man and nature. His mind being filled with high themes, he asserts his individuality, expresses himself in regard to them, and thereby gains at once both a closer and clearer comprehension of what he has studied, and also the power by which he may become a factor in his generation.

3. I would wish to omit the word "weekly" where it occurs in the discussion of the subjects of general history and science, unless it be understood to mean that an amount of time in the school year equivalent to sixty minutes weekly be given to each of these subjects. It is often better to condense these studies into certain portions of the year, giving more time to them each week, and using them as the basis, to a certain degree, of language work. I believe that, especially with young children, clearer concepts are produced by such connected study, pursued for fewer weeks, than by lessons seven days apart.

4. In my judgment manual training should not be limited to the seventh and eighth grades, but should begin in the kindergarten with the simple study of form from objects and the reproduction in paper of the objects presented, and should extend, in a series of carefully graded lessons, through all the grades, leaving, however, the heavier tools, such as the plane, for the seventh and eighth grades. By these means an interest is kept up in the various human industries, sympathy for all labor is created, and a certain degree of skill is developed; moreover, the interest of the pupils in their school is greatly enhanced. Manual training has often proved the magnet by which boys at the restless age have been kept in school instead of leaving for some gainful occupation.

5. I desire to suggest that geometry may be so taught as to be a better mathematical study than algebra to succeed or accompany arithmetic in the seventh and eighth grades. I do not refer particularly to inventional geometry, to which the Committee accords a slighting attention, but to constructive geometry and the simplest propositions in demonstrative geometry, thus involving the comprehension of the elementary geometric forms and their more obvious relations. This study may be made of special interest in connection with manual training and drawing, while it presents fewer difficulties to the immature mind than the abstractions of algebra, since it connects more directly with the concrete, by which its presentation may often be aided.

6. While agreeing fully with the majority of the Committee that the full scientific method should not be applied to the study of elementary science by young children, yet I am compelled to favor more of experimentation and observation by the child, and less of telling by the teacher than the report would seem to favor.

7. I would go farther than the majority of the Committee, and insist that, except in rare cases, there should be no specialization of the teaching force below the high school, and that even in the first years of the high school, so far as possible, specialization should be subordinated to a general care of the

child's welfare and oversight of his methods of study, which are impossible when a corps of teachers give instruction, each in one subject, and see the student only during the hour of recitation.

8. While in the main I agree with the bald statements under the head "Correlation by synthesis of studies," since reference is made to only a very artificial mode of synthesis not at all in vogue in this country, I must dissent emphatically from this portion of the report as by inference condemning a most important department of correlation, to which I have referred earlier. The doctrine of concentration is not necessarily artificial; rather it refers to the higher unity, of which this Committee has spoken in glowing terms as belonging to the province of higher education. It also includes the division of the school curriculum into content and form, which this Committee inferentially adopts in its treatment of language. I do not believe, any more than do the majority of the Committee, that the entire course of study can be literally and exactly centred about a single subject, nor do I believe in any artificial correlation; but there is a natural relation of all knowledges, which this Committee admits in various places, and which is the basis of a proper synthesis of studies, according to the psychological principle of apperception.

9. If by the term "oral," as applied to lessons in biography and in natural science, the Committee means, as the word would imply, that the instruction is to be given in the form of lectures by the teacher, I cannot in full agree with the Committee's conclusions. As I have already stated, in natural science the work should be largely that of observation, and in history and biography, while in the very lowest grades the teachers should tell the children stories, as soon as it is possible the desired information should be obtained by the student through reading. To this end the reading lesson in school should be properly correlated with his other studies, and he should be advised as to his home reading. The information thus obtained should be the subject of conversation in the class, and should furnish the material for much of the written language work of the children.

10. I must dissent emphatically and entirely from that portion of the report which recommends that a text-book in grammar be introduced into the fifth year of the child's school life. It is a question in my mind whether it would not be better if the text-book were not introduced into the grades below the high school at all. Certainly it should not appear before the seventh year. Such knowledge of grammar as will familiarize the child with the structure of the sentence, the basis of all language and as will enable him to use correctly forms of speech which the necessities of expression require, should be given orally by the teacher in connection with the child's written work, when needed; but against the introduction of a text-book upon grammar, the most abstruse of all the subjects of the school curriculum, when the pupil is not more than ten years old, I must protest. Instead of that, the child should devote much time, some every day, to writing upon proper themes in the best English he can command, furnishing occasion to the teacher to correct such errors as he may make, and acquiring by use acquaintance with the correct forms of grammar. If, as will doubtless be the case in most cities, local conditions render the introduction of Latin into the eighth grade inadvisable, this study of grammar may be made in that grade somewhat more intensive.

11. If by a text-book in geography is meant that which is commonly understood by the term, and not simply geographical reading matter, in my judgment, it should not be introduced earlier than the fifth year.

These suggestions and expressions of dissent, if approved by the Committee, would necessitate some change in the programme submitted, the most important of which would be the making room for the production of English in the grades. This could be provided in the first and second grades by taking some of the time devoted to penmanship and doing the work partly in connection with the reading classes. In the third and fourth grades it should take some of the time devoted to penmanship and should be studied also in connection with geography and reading, and in the fifth and sixth grades it should take all of the time given to grammar.

I regret to be compelled to express dissent upon so many points, but as most of them appear to me vital and as the differences appear to be not merely superficial but fundamental, affecting and affected by one's entire educational creed, I cannot do otherwise. To most of the report I most gladly give my assent and approval.

BY L. H. JONES, OF CLEVELAND.

I agree most heartily with the main features of the foregoing report of the sub-committee on correlation of studies. It is so admirable in its analysis of subjects and in its statement of comparative education values, and so suggestive in its practical applications to teaching, that I regret to find myself appearing in any way to dissent from its conclusions. Indeed, my principal objection is not against anything contained in the report (unless it be against a possible inference which might be drawn at one point), but it refers rather to what seems to me to be an omission.

In addition to all the forms of correlation recommended in the report, it seems to me possible to make a correlation of subjects in a programme in such way that the selection of subject-matter may be to some extent from all fields of knowledge. These selections should be such as are related to one another so as to be mutually helpful in acquisition. They should be the main features of knowledge in the different departments.

These different departments from which the chosen subjects should be taken must be fundamental ones and must be sufficiently numerous to represent universal culture. The report itself indicates conclusively what these are.

Reference is made in the report to various attempts that have been made to correlate subjects of study.

A very just criticism is made upon that attempt at correlation by the use of the story of Robinson Crusoe as a centre of correlation. It is distinctly pointed out in the report that the experiences of Robinson Crusoe are lacking in many of the elements of universal culture, and in many elements of education needed to adjust the individual properly to the civilization of our time and country. It is equally evident that the attempt to make this story the centre of correlation leads directly to trivial exercises in other subjects in order to make them "correlate" with Robinson Crusoe. It is also shown in the report that it naturally leads to fragmentary knowledge of many subjects very much inferior to that clear, logically connected knowledge of a subject which may be had by pursuing it without reference to correlating it with all others.

It is at this point that in my judgment a wrong inference is permitted by the report.

It does not, as it seems to me, follow that, because correlation based on Robinson Crusoe is a failure, all correlations having the same general purpose will necessarily prove failures. For my own part, I do not believe that correlation needs any "centre," outside the child and its natural activities. If, however, it seems wiser to give special prominence to any given field of acquisition, it should, in my judgment, be accorded to language and its closely related subjects---reading, spelling, writing, composing, study of literature, etc., etc. Indeed, language as a mode of expression is organically related to thinking, in all fields of knowledge, as form is related to content. A "system" or "programme" of correlation on this basis would seek for fundamental ideas in all the leading branches and make them themes of thought and occasions of language exercises. The selections would omit all trivialities in all subjects, and would not attempt to correlate for the mere sake of correlation; but would seek to correlate wherever by such correlation kindred themes may be made to illuminate one another. To illustrate, concrete problems in arithmetic would be sought that would clearly develop and illustrate mathematical ideas and their application; but in a secondary way these problems would be sought for in the various departments of concrete knowledge---geography, history, physics, chemistry, astronomy, meteorology, political, industrial, or domestic economy. But none of these themes would be so relied upon for problems as to compel one to choose unreasonable or trivial relations on which to base them. The problems themselves should represent true and important facts and relations of the other subjects as surely and rigidly as they should involve correct mathematical principles; and all such exercises should be rightly related to the child's education in language.

In like manner, when a child is engaged in nature study of any kind, some valuable problems in mathematics may be found rightly related both to the subject directly in hand and the child's natural progress in arithmetic. Also many of the lessons in nature study are directly related to some of the finest literature ever produced, in which analogies of nature are made the means of expression for the finest and most delicate of the human experiences. When the child has mastered the physical facts on which the literary inspiration is based is the true time to give him the advantage of the study of such literature. These ideas are not only rightly related to one another, but to the mind itself. It is, so to speak, the nascent moment when the mind can easily and fully master what might else remain an impenetrable mystery; and all because subjects and occasion have come into happy conjunction.

This is not the place in which to attempt any elaboration of such a system of correlation. But I feel that its absence from the report may make many persons feel that the latter is so far incomplete.

BY WILLIAM H. MAXWELL, OF BROOKLYN.

With the main lines of thought in this report I find myself in agreement. With many of its details, however, I am not in accord. I regret to have to express my dissent from its conclusions in the following particulars: —

1. The report makes too little of the uses of grammar as supplying canons of criticism which enable the pupil to correct his own English, and as furnishing a key (grammatical analysis) that gives him the power to see the meaning of obscure or involved sentences.

2. For the study of literature, complete works are to be preferred to the selections found in school readers.

3. That species of language exercise known as paraphrasing I regard as harmful.

4. The study of number should not be omitted from the first year in school. Practice in the primary operations of arithmetic should not be omitted from the seventh and eighth years. The quadratic equation should be reserved for the high school.

5. The foreign language introduced into the elementary school course should be a modern language --- French or German. Latin should be reserved for those who have time and opportunity to master its literature.

6. In the general programme of studies, the school day is cut up into too many short periods. The tendency of such a programme as that in the text would be to destroy repose of mind and render reflection almost an impossibility.

7. I desire to express my agreement with the opinions stated in Sections 2, 3, 6, and 9 of Mr. Gilbert's dissenting opinion; and, in the main, with what Mr. Jones says on the correlation of studies.

Dissent from Dr. Draper's Report.

BY EDWIN P. SEAVER, BOSTON.

I find myself in general accord with the doctrines of the report. There is only one feature of it from which I feel obliged to dissent, and that is an important though not necessarily a vital one. I refer to the office of school director. I see no need of such an officer elected by the people, and I do see the danger of his becoming a part of the political organization for the dispensation of patronage.

All power and authority in school affairs should reside ultimately in the board of education, consisting of not more than eight persons appointed by the mayor of the city, to hold office four years, two members retiring annually and eligible for reappointment once and no more. This board should appoint as its chief officer a superintendent of instruction, whose tenure should be during good behavior and efficiency, and whose powers and duties should be to a large extent defined by statute law, and not wholly or chiefly by the regulations of the board of education. The superintendent of instruction should have a seat and voice but not a vote in the board of education. The board of education should also appoint a business agent, and define his powers and duties in relation to all matters of buildings, repairs, and supplies, substantially as set forth in the report in relation to the school director.

All teachers should be appointed and annually reappointed or recommended by the superintendent of instruction, until after a sufficient probation they are appointed on a tenure during good behavior and efficiency.

All matters relating to courses of study, text-books, and examinations should be left to the superintendent and his assistants, constituting a body of professional experts who should be regarded as alone competent to deal with such matters, and should be held accountable therefor to the board of education only in a general way, and not in particular details.

BY ALBERT G. LANE, CHICAGO.

I concur in the recommendations of the sub-committee on the Organization of City School Systems as summarized in the concluding portion of the report, omitting in item THIRD the words, "And that it be constituted of two branches acting against each other." Omit FIFTH, "But we think it preferable that he be chosen in the same way that members of the board are chosen and be given veto power upon the acts of the board." I recommend that the veto power be given to the president of the board.

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April 18 20: Northwestern Iowa Teachers' Association, Sioux City.
June 18–20: Missouri State Teachers' Association, Pertle Springs.
July 5–12: National Educational Association, Denver, Col.
July 9–12: American Institute of Instruction, Portland, Me.

IOWA.

Educational meetings at Council Bluffs, Southwestern Association, April 11, 12, and 13. At Sioux City, Northwestern Association, April 18, 19, and 20.

County superintendents' meetings at Cedar Rapids, April 3 and 4; at Council Bluffs, April 10 and 11; at Sioux City, April 17 and 18; at Des Moines, April 24 and 25; at Ottumwa, April 30 and May 1; at Charles City, May 15 and 16.

The meeting of the Southeastern Association at Fairfield, February 14, 15, and 16, had an enrollment of 701 teachers. Burlington, Keokuk, Ottumwa, and many smaller places, gave their teachers the day if they desired to attend. Many directors of rural districts did the same. The representative men and women from all parts of the state were present, together with a large number of school directors and country school teachers.

At the same time, the county meeting at Dyersville, in Dubuque county, called out an attendance of 500, composed of school directors, school teachers, and many citizens.

At Des Moines, March 2, over a hundred school directors from all parts of the county were in council the entire day.

MICHIGAN.

The Hustler of the high school at Coldwater publishes a good portrait of Egbert L. Briggs, the superintendent. Mr. Briggs is forty years of age, a native of Michigan, a graduate of the University of Michigan; has been teaching twenty-three years wholly in this state, mostly in New Haven, Richmond, Eaton Rapids, Grand Haven, and Coldwater. He is a wide-awake, thoroughly earnest, practical educator.

NORTH DAKOTA.

The free text-book bill bids fair to lie on the shelf another year, owing to the enormous expense connected with enforcing it. Some feasible plan must be presented to the law-makers for economizing in school matters, though to employ clerks and cloak-room janitors without number, at the expense of the taxpayers, does not in the least embarrass their consciences.

NEW YORK.

The Schoolmasters' Association of New York and vicinity held its sixtieth regular monthly meeting March 9, Columbia College. The book review committee and the committee on educational periodicals presented reports. The address of the day was given by President J. G. Schurman of Cornell. His title was "Some Unsettled Problems of Secondary Education." In view of the prominence of Dr. Schurman in educational circles, it was hoped that all the members of the association would make special efforts to attend. Charles A. Smith, Wilson and Kellogg school, New York city, was a candidate for active membership in the association. All men and women interested in the work of the Schoolmasters' Association are cordially invited to attend its meetings, held on the second Saturday of each month, from October to May, at the time and place indicated in the first paragraph. Theodore C. Mitchill, secretary, 133 West 48th street, New York city.

The board of education of New York city has appointed Mrs. W. S. Rainsford, wife of the rector of St. George's church, as a school trustee of the eighteenth ward. She is the first woman to be appointed to that office in this city for many years. Her term of office continues until 1899.

School Commissioner A. Edson Hall of the second district, Saratoga county, is making arrangements for the annual teachers' institute for the second commissioners' district. The institute will be carried out on the same plan as last year, when it attracted attention all over the state. It will be conducted April 22–26 at Saratoga Springs by State Institute Conductors A. S. Downing, who was here last year, and Welland Hendrick, formerly principal of the high school at that place. They will be assisted by Miss Eggleston, who is considered the best primary instructress in the country; Miss Gratia L. Rice, instructor of drawing; Dr. E. N. Jones, principal of the Plattsburgh normal school; and Professor Bugbee of the Oneonta normal school, and others.

OHIO.

The Western Reserve University of Cleveland is to have a summer school from July 1 to 27, under the direction of Professor H. E. Bourne, Station B., Cleveland. Among the instructors are Professor Aikins, on "Educational Psychology"; Professor Ayer, "English Composition"; Professor Bourne on "The History of Education"; Professor Curtis, on "Philosophy"; Professor Daering, on "Methods of Teaching"; Professor Emery, on "Latin"; Professor Harris, on "Methods of Teaching"; Professor Hulme, on "Old English."

PENNSYLVANIA.

George H. Cliff, principal of the Philadelphia girls' normal school, was the only Philadelphia educator at the Cleveland meeting, so far as reported.

WISCONSIN.

Superintendent G. W. Peckham of Milwaukee has done the cause of kindness to animals great service by insisting that every teacher in the city read to her pupils, in the spring of each year, the following statute:—

SEC. 249. It shall be unlawful for any person or persons to injure or destroy any kind of birds within the city of Milwaukee. Any person found throwing stones, or shooting, or using any implements with the intention of killing or injuring any bird within said city, shall be punished by a fine of not less than five dollars nor more than twenty-five dollars for each and every offense.

It is also required that the reading of this law be made the basis of two talks — one on "Respect for Law as Essential to Good Citizenship," and one on "Kindness to Animals." With the latter talk read from Whittier's Child Life "Who Stole the Bird's Nest?" "The Brown Thrush," and "A Bird's Eye View," pages 67–70.

NEW ENGLAND.

MASSACHUSETTS.

At a recent meeting of the Malden school board the committee on increased school accommodations recommended a ten-room brick building, with a hall, for the Linden district, instead of an eight-room building, which the aldermen have voted to build. It was also recommended that a ten-room brick building be erected in the Belmont district, and a six-room building in the west district. In relation to the Belmont district, it was stated that the pupils could be accommodated by adding four more rooms to the present building, but that would give only temporary relief. The report was referred to the city government, with the recommendation that the proposed buildings be constructed as soon as possible, as the schools in those districts are very much crowded. It was voted to close the evening schools March 25.

The dedication of the new Drury hall connected with the Howard Seminary in Bridgewater attracted a large number of people, and the programme was carried out in a successful manner. Previous to the exercises there was a reception in the drawing rooms. The address of the day was delivered by F. E. Howard, who gave a brief history of the founder of the school. He formally named the building Drury hall, in honor of Mrs. Julia Drury, whose husband left $35 000 to the institution, which it will get at the death of Mrs. Drury. Remarks were made by Hon Robert O. Harris of East Bridgewater, Judge George Alden, Rev. Mr. Jenks, and others.

Miss Ellen M. Barr died in Boston, February 7, after a short illness. The deceased was born here in 1840, and graduated from the Medford high school, in which institution she held for many years the position of assistant. After leaving Medford, she taught a few years in Boston before

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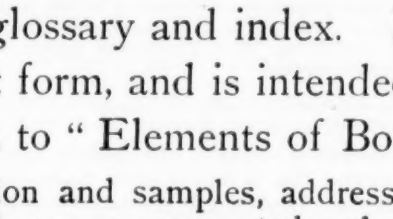

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CONNECTICUT CLASSICAL AND HIGH SCHOOL TEACHERS.

The fourth annual meeting of the Connecticut Association of Classical and High School Teachers was held at Hartford, on February 23 About seventy teachers were in attendance. Principal Isaac Thomas of the Hillhouse high school, New Haven, presided.

Professor William North Rice of Wesleyan University, Frederick S Morrison of the Hartford public high school, Horace D. Taft of Watertown, Martin E. Jensen of the Norwich Free Academy, and Miss Marion P. Whiting of the Hillhouse high school, New Haven, discussed the various features of the different branches taught in high schools.

The report of the committee upon statistics of secondary schools in the state was read by the chairman, Professor Frederick S Morrison of the Hartford public high school. The report dealt with four grade high schools. Of these there are thirteen in Hartford county, ten in New Haven, two in New London, three in Fairfield, three in Windham, four in Litchfield, one in Middlesex, and two in Tolland. In Hartford county there are four private schools which come under this grade. The detailed report of Hartford county shows a marked increase in the number of teachers and pupils. The following table will show the figures at a glance:—

Year.	Women Teachers.	Men Teachers	Total.	Pupils
1891	22	27	49	1,321
1892	25	30	55	1,442
1893	30	35	65	1 592
1894	32	40	72	1,718

From these schools in 1891, 28 boys and 17 girls were sent to college; in 1892, 29 boys and 15 girls; in 1893, 38 boys and 17 girls; in 1894, 44 boys and 11 girls.

The high schools of Connecticut send graduates to fifty-seven different colleges. There are in the state seventy-two private schools, having 1,590 pupils over sixteen years of age.

Mr. Morrison offered a set of resolutions expressing the appreciation of the association of the value of the statistics published by the state board, and that teachers be requested to co-operate by sending in answers to questions. The resolutions were adopted. Several teachers spoke on the matter of making distinction between endowed schools, which are really public schools, and private schools. The committee was instructed to confer with Secretary Hine in this matter.

The report of the committee on secondary school programmes was presented by the chairman, Professor M M. Marble of the Hillhouse high school in New Haven. The committee in constructing these programmes aimed to make them accord with the recommendations of the conferences of December, 1892. The committee has endeavored to include such studies as are of fundamental importance, to prepare and give right of way to a general English course, and to make this course educationally the strongest; in the college preparatory courses to give primary consideration to the existing college requirements; to harmonize the courses and to postpone differentiation of courses, as far as possible, until the third year. Printed slips containing the four courses for four years each were provided and distributed. The four courses are English, classical, Latin scientific, and modern language scientific.

In conclusion, Mr. Marble presented a set of resolutions approving the course as presented by the committee; that the first three years of the course be accepted for equivalent courses at a scientific school, and that the authorities of scientific schools be requested so to receive them.

Professor George A. Booth, the head of the commercial department of the Hillhouse high school, New Haven, presented a scheme for a commercial course at the public schools. "It takes longer," said Professor Booth, "to train a man for business than it does for college, and yet there is no provision made in our public schools for this large class of pupils. A man goes through college and enters business For the first two or three years he gets instruction from the office boy." The commercial course, as presented by Mr. Booth, is in operation at the Hillhouse high school. It includes bookkeeping, commercial correspondence, commercial paper, typewriting, stenography, and mechanical drawing.

The discussion on the foregoing courses was opened by Professor William North Rice of Wesleyan University, who spoke on the English course. All studies are both disciplinary and informational. There can be no exact proportion for this and that study laid down. Much depends upon the future plans of the student. All of the courses offered are good courses, and a student pursuing any one of them may attain a liberal education, and the satisfactory completion of any one of these courses should admit the student to any college At the same time the English course will be taken largely by those who do not intend to enter college. In this course the informational value should be more important than the disciplinary value. Professor Rice objected to spending a whole year on botany and making physiology optional. He regarded physiology as very important, and thought that it should be required.

Dr. Robert P. Keep o Norwich made a report of the committee upon the examination boards of the university schools.

Officers were elected as follows: President, Dr. Robert P Keep of the Norwich Free Academy; vice-president, W. B. Ferguson of Middletown; recording secretary, Miss M. A. Howe of Hartford; corresponding secretary, B. Dwight Morgan of Morgan school, Clinton; treasurer, Miss Clara A. Pease of Hartford: board of directors, the officers and George H. Tracy of Waterbury, Edward S Coy of Hotchkiss school, Lakeville, and M. M. Marble of Hillhouse high school of New Haven.

PACIFIC COAST PHILOSOPHY.

Leaving the Atlantic states at the close of the year, and making a new home at this "Athens of the Pacific," I am tempted to give some first impressions of the educational enterprise of this new wonderland.

The recent opening of a new high school in Oakland at a total cost of $275,000 for the building alone, affords some idea of the substantial work done by the public-school system.

The University of California, practically at Oakland, with its many departments and its 281 officers and instructors, and about 1 400 students, is the promise of the future for the best results in science philosophy, literature, and the fine arts

By invitation from our friend, Professor Howison, I attended the Philosophical Union and heard a discussion of Royce's "Religious Aspect of Philosophy." An interesting paper was read by Charles Mills Gayley, professor of literature, and since he might be considered a representative of both the literary and philosophical spirit of the university, I wish to submit the following extracts to show that in the world of thought our representative educators are binding the East and the West together more firmly than the railroad systems do the Atlantic and Pacific coasts. Discussing the views of Professor Royce, our distinguished United States commissioner of education is also introduced, because he has become a national authority on philosophic questions, and it will tend to show the appreciation of such subjects to add that Professor Howison kept Dr. Harris and the whole ideal school of philosophers before an appreciative audience until 11 P. M. This proves that mind, no less than money, has a hold upon our people here.

At the close of his scholarly paper, Professor Gayley said: "In the summer of 1885, I had the pleasure, in company with Professor Morris, of visiting Principal Caird, then at his summer home in Perthshire. One of our conversations turned upon philosophers in America, and I remember well Principal Caird's saying, that of the younger philosophers, he considered Royce of Harvard to be the most promising."

Thus it is that we can even make two worlds one in the sphere of thought, and for this rapid transit system of intercommunion the possible becomes forthwith actual at the outset, to adopt a suggestive phrase so popular with Mr. Royce.

The close fellowship between our workers here and New England schools gives the JOURNAL a deserved influence with California teachers.

THE MAGAZINES

— The *Forum* for March practically sweeps over the whole field of contemporaneous activity, presenting a dozen timely and interesting essays on a wide variety of subjects, written by special students of the topics treated. Mr. James H Eckels writes on "The Business World *vs.* the Politicians"; Mr Andrew Carnegie tells "What Would I Do with the Tariff if I Were Czar"; Senator H. C. Lodge writes on "Our Blundering Foreign Policy," illustrating his contention with recent examples of our dealing, notably with Hawaii and Japan; Professor E. R. A. Seligman asks, "Is the Income Tax Constitutional and Just?" and argues that it is both just and constitutional; Mr. Frederic Harrison continues his brilliant series on the Great Victorian Writers, with "Charlotte Brontë's Place in Literature"; Mr. Hamilton W. Mabie discusses the novel of romance and adventure, defining "The Two Eternal Types in Fiction"; Dr. Northrop, "the father of village improvement," describes "The Work of Village Improvement Societies"; Mr. Henry Holt continues his discussion of "The Social Discontent," begun in the February number, this time suggesting some remedies. Two other articles closely allied to Mr. Holt's are: "Two Examples of Successful Profit-Sharing," by Professor Frank W. Blackmar; and a review by Mr. Jacob A. Riis of the report of the last tenement-house committee of New York, entitled "The Tenement the Real Problem of Civilization" A most interesting article is contributed by Dr. L Emmett Holt, an eminent physician of New York city, on "The Antitoxine Treatment of Diphtheria." Lastly, Mr. John Gilmer Speed, who lately spent "A Week in New York Theatres," going to six consecutive performances, freely criticises the plays presented and the actors taking part in them, explaining why the dramatic art in America is in decadence. New York: The Forum Publishing Company.

— An extremely interesting paper in the March *Ladies' Home Journal* is by Dr. W. J. Rolfe, the Shakespearian authority, who gathers together everything that is known about Shakespeare's wife, her courtship, her married life, and her children, and presents his material in a popular and most fascinatingly-interesting article. Conan Doyle in the same magazine tells what he thinks are the "Literary Aspects of America"; while William Dean Howells is particularly entertaining in his literary autobiography this month in telling of Thomas Hardy and Tolstoy, and of the greatest literary passion of his life. Dr. Parkhurst fulfills the promise of his first article, and is very strong in what he says of "The Unit of Society," while Mrs. Burton Harrison is instructive in fixing many of the little courtesies of social life, about which everybody likes to be right. An excellent glimpse is afforded of the family and home life of Bill Nye, by Augusta Prescott. Whether women should be allowed into men's clubs is treated humorously by John Kendrick Bangs. Just what women will wear this spring in hats, wraps, and gowns, and the correct shades, are made a specialty by the *Journal's* fashion editors, and their work, and that of the artists, is well done. It is a good number in every respect, and a beautiful one as well, clothed in its artistic cover by Albert Lynch, the French artist. Philadelphia: The Curtis Publishing Company.

— The *Annals of the American Academy* for March contains four principal papers, as follows: "Elected or Appointed Officials," by Hon. J. G. Bourinot, clerk of the Canadian House of Commons; "Pacific Railway Debts," by R. T. Colburn, Esq., of Elizabeth, N J.; "Terminology and the Sociological Conference," by Professor H. H. Powers of Smith College; and "A Neglected Socialist," by Dr. F. C. Clark of Berlin. Two shorter papers are contributed by Professor A. W. Small of the University of Chicago, and Professor F. H. Giddings of Columbia College. The first is on the "Organic Concept of Society," and the second on "Sociology and the Abstract Sciences." This number also contains a report of the last annual meeting of the American Economic Association and the American Historical Association, as well as an account of the formation of the new Political Science Association of the Central States. In addition to these papers there are as usual personal notes, book reviews and notes, notes on municipal government, and sociological notes. Philadelphia: $1 00, $6 00 a year.

— "Mount Saint-Michel," by J. Howe Adams, forms the subject of the leading article in the March *Cosmopolitan*. This is followed by a charming description of "The Beautiful Models of Paris"; "A President of France," by Ernest Daudet; "We of the Stylus," "Pearl-Diving and Its Perils," "Beauty from an Indian's Point of View," "The Observatory of the Vatican"; the serials and other interesting shorter papers. The regular monthly departments are filled with material of real value.

— The current number of the *Jenness Miller Monthly* is filled with good things which educate, harmonize, and relieve the prevailing conditions of family life. A rich literary tinge is also creeping into the pages, forming a charming variety when placed in the same monthly grouping with the best of domestic, social, and hygienic matter. The Kindergarten Department is highly educative and practical. There is an interesting article for would-be newspaper women in the form of a valuable paper entitled "Occupations for Women." Society, its requirements and enjoyments, is handled to perfection in a department known as "Afternoon Tea"; the Household Science Department in itself is well worth the price of subscription, $1 00 per year, to any woman who is in any sense a home keeper. An article on "Tree Grafting for Women" opens up a new field of industry for those who are still looking for occupations. The spring fashion article, written from the Jenness Miller standpoint, is rich in abundant suggestions for beautiful hygienic and appropriate dress. New York.

— The *New World* for March begins the fourth year of this able review of religion, ethics, and theology. These ten articles are contributed by strong writers in several religious communions, and fifty five pages of careful book reviews sustain the high reputation of the *New World* in this field: "The Devil," C. C. Everett; "Race Prejudice," Maurice Bloomfield; "Oliver Wendell Holmes," T. T. Munger; "The God of Zoroaster," L. H. Mills; "The Truth of the Christian Religion," Allan Menzies; "The Preaching of Phillips Brooks," Henry G Spaulding; "Some of Mr. Kidd's Fallacies," James M. Whiton; "The Origins of the Religion and History of Israel," F. Meinhold; "The Poet in an Age of Science," Charles J. Goodwin; "The Song of the Well," Karl Budde. Houghton, Mifflin, & Co. $3.00 a year.

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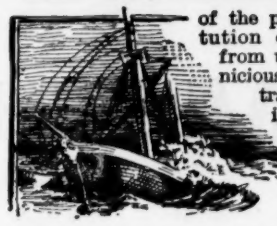

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The *Forum* for March; terms, $3 00 a year. New York: The Forum Publishing Company.

Jenness Miller Monthly for March; terms, $1.00 a year. New York: 114 Fifth avenue.

Our Day for March; terms, $2.00 a year. Springfield, O.: Our Day Publishing Company.

Educational Review for March; terms, $3.00 a year. New York: Henry Holt & Co.

The *Catholic World* for March; terms, $3.00 a year. New York.

Popular Science Monthly for March; terms, $5.00 a year. New York: D. Appleton & Co.

The *School Review* for March; terms, $1 50 a year. Hamilton, N. Y.

Outing for March; terms, $3.00 a year. New York: 239 5th avenue.

The *Cosmopolitan* for March; terms, $1.50 a year. New York.

Godey's Magazine for March. New York: 23 Lafayette place.

Education for March; terms. $3.00 a year. Boston: 50 Bromfield street.

Lippincott's for March; terms $3.00 a year. Philadelphia.

The *North American Review* for March; terms, $5.00 a year. New York.

The *Treasury* for March; terms, $2.50 a year. New York: E. B. Treat.

The *Journal of the Franklin Institute* for March; terms. $5.00 a year Philadelphia.

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ILLUSTRATED PLANT LIFE. — (V.)

BY MACLEOD, BROOKLYN, N. Y.

ROOTS.

THE root is that part of a plant which grows downward into the ground. It serves a twofold purpose, gathering up nourishment for the other parts of the plant, and by means of its rootlets holding the plant firmly in position.

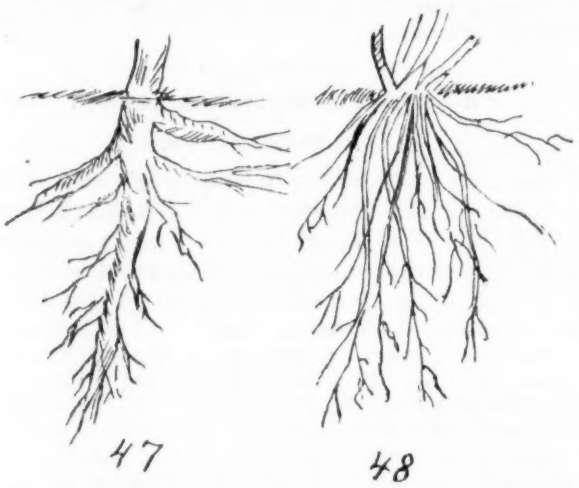
CLASSES OF ROOTS.

Roots are divided into three classes, varying as to the length of time they live.

Annual roots are those that last but one season. Most of our ornamental plants belong to this class, also oats, Indian corn, beans, barley, and cucumbers They spring from seeds planted in the spring, grow and blossom during the summer, and at the first frost they fade and die. Plants of such short duration are called *Annuals.*

Biennial roots, as the name implies, live *two* years. During the first year the plants do not blossom, but merely prepare for the second year's work. They dry and wither during the winter, but do not die, and in the spring of the second year awake to active life, bear leaves, blossoms, and fruit, and at the end of the season die, when their seeds are ripe. Well-known examples of biennial plants are the beet, cabbage, carrot, cauliflower and turnip.

Perennial roots are those that live on year after year. Trees and shrubs belong to this class. They lose their



foliage and have a *dead* appearance every winter, but in the spring wake up and put forth fresh shoots and leaves The potato, onion, leek, artichoke, lily, peony, dahlia, tulip, and iris are all perennial.

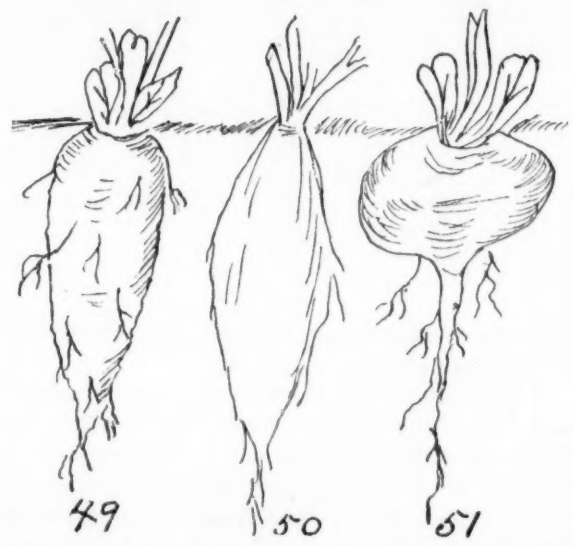
PRIMARY ROOTS AND SECONDARY ROOTS.

Those roots which grow downward from a sprouting seed and send out rootlets, *underground*, are called *primary*, *original*, or *true* roots. Sometimes the *stem* of a plant will by some means touch the ground and a new root be started. Such a root is known as a *secondary*, or *stem*, root. As a rule, annual and biennial plants have primary roots, and those plants which are raised from slips or cuttings have secondary roots. Cut a branch from a geranium and place it in the ground. If it takes root and grows, you will have an example of a secondary root.

FORMS OF ROOTS.

Dig up a number of plants and secure the roots. Note the different shapes and place those that resemble each other in one collection.

Roots are either *fleshy* or *fibrous*, and these terms explain themselves. A fleshy root is shown in Fig. 47, a fibrous root in Fig. 48. Notice the difference. In a fibrous root, the rootlets or fibres are designed merely to absorb nutriment from the soil. Fleshy roots often act as storehouses, in which nourishment is stored for the future life of the plant. They are found on biennials and perennials. A fleshy root, which consists of one straight body, tapering gradually down to a point, is called a tap-root. Fig. 47, already referred to, represents a tap-root. When the root assumes the shape shown in Fig. 49, it is called conical. Examine the portion of a beet, parsnip, or carrot found underground. Other fleshy roots taper at both ends. Examine a radish. *Spindle shaped* or *Fusiform* are the terms used to describe such a root. One is illustrated in Fig. 50. A



turnip-shaped root is shown in the next figure (No. 51). *Napiform* is another name for this shape. An odd root is shown in illustration No. 52. It is a *fibrous* root, some of the fibres having numerous small swellings along their length. There is a strong resemblance between the fibres and strings of beads.

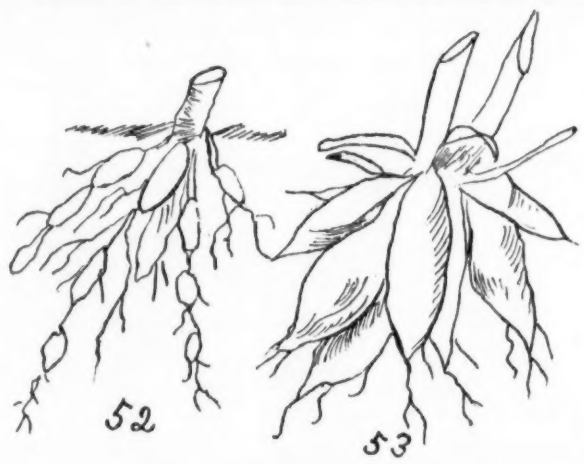
Moniliform roots these are called. When the fibres are thick and fleshy, the root is said to be clustered or tuberous. (See Fig. 53). A dahlia is an excellent example of a plant with a tuberous root.

AQUATIC PLANTS.

Most plants have their roots in the ground, but there are some which take root in the water, the flowers and leaves being on the surface and the roots below. Water lilies belong to this class.

AERIAL PLANTS.

Another style of plant derives its nourishment from the air. The roots do not touch ground, but grow from



the boughs of trees. They obtain no food from the boughs, however, but are entirely dependent upon the air for what is needful.

PARASITES.

Plants which take root on the branches of trees and *do draw* nourishment from the tree are called *parasites.* The mistletoe is such a plant.

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BY OLIVE C. HAPGOOD,
Teacher of Sewing, Boston Public Schools.

Bindings.

[A binding or band is used to strengthen and cover the raw edges of a seam.]

MATERIALS. — *For the Teacher.* — A large needle, coarse thread, scissors, pins, three pieces of cotton cloth, and three lengthwise strips of cotton cloth, larger, but in the same proportions as those for the pupils, blackboard, and chalk.

For the Pupils. — No 8 needle, No. 50 thread, scissors, pins, three pieces of cotton cloth, each half a yard long and seven inches wide; for the bindings three lengthwise strips of cloth, each eight inches long and three inches wide.

Preparations. — 1. Teach the use of bands by showing garments or models of the three different ways of putting on bands, explaining each method and its use.

2 Let the children mention the different parts of garments requiring bands.

3. Explain that the warp or lengthwise threads of cloth are stronger than the woof threads, and as bindings require strength the strips should be cut lengthwise of the cloth. That the children may be able to distinguish between the warp and woof threads, if there is no selvedge, show them that the warp thread is coarser and more twisted, while the woof thread is flat and wavy, and that the woof edge will stretch in pulling, while the warp edge will not.

4. Show the children how to find the middle of each band, and mark the place by cutting a notch (Fig. 1) at the edge of each side, or by taking a cross stitch (Fig. 1) with colored thread. The gathers and binding should

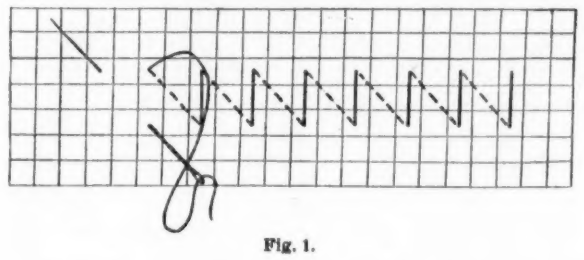


Fig. 1.

always first be marked into an equal number of divisions, and the corresponding divisions placed together, that there may be no more fullness in one part than in another.

5. Next show how to cut off each corner of the bands, one-fourth of an inch deep (Fig. 1), to avoid having many thicknesses of cloth when the corners are turned.

6. The marking of the middle of the band and the cutting of the corners can be easily demonstrated by drawing Fig. 1 on the blackboard.

7. Have the children make a narrow hem on the two short sides of each large piece of cloth and a broader hem on the lower edge of the pieces. After having the children mark the middle of the upper edge by a notch or cross-stitch, have them gather two of the pieces of cloth, holding the right side next to them, taking the stitches one-fourth of an inch from the upper edge, and skipping over twice as much as they take up. The two pieces should be stroked after being gathered.

Show the children how to prepare the third piece of cloth for overhanding to a binding by creasing one inch from the raw edge, and, without unfolding it, making two or more rows of gathering directly under each other, the first row being one eighth of an inch from the folded edge.

GATHERS SET INTO A BAND.

Setting-in of Gathers. — 1. Crease the four edges of the band one fourth of an inch from the edge.

*Copyrighted by O. C. Hapgood, author of "School Needlework," published by Ginn & Co., Boston.

2. After folding lengthwise, baste and overhand the ends, beginning at the corners.

3. Unwind the thread from the pin, and spread the gathers out until the cloth is of the same length as the band.

4. Holding the right side of the gathers towards you, place them between the edges of the band.

5. Pin the middle of one edge of the band to the mid-

Fig. 2.

dle of the gathers, and exactly over the gathering thread (Fig. 2, *b*).

6. Pin the ends of the band on to the ends of the gathers (Fig. 2, *a* and *c*).

7. Tighten or loosen the gathering thread so that the length of the gathered edge exactly matches that of the band.

8. Arrange the gathers so that the fullness is spread out evenly along the band, and, if necessary, put in more pins.

9. Baste the band on, being careful to just cover the gathering thread.

10. Take out the pins.

11. Inserting the needle as for hemming, carefully draw the needle through, leaving a little end of the thread to be tucked under the fold with the point of the needle.

12. When drawn on the blackboard, the shape of the stitch is like the letter N, as in overhanding, but the slant here is underneath, while in overhanding it is on the top (Fig. 3).

13. Take up, close below the gathering thread, one gather and then a thread or two of the band (Fig, 2).

14. Take the next stitch by inserting the needle into

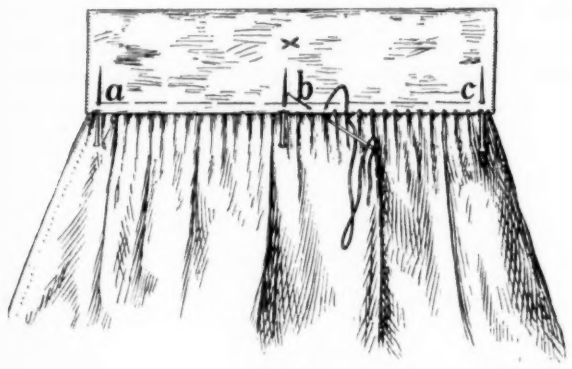


Fig. 3.

the next gather and directly under the place where the thread comes out of the band, and at the same time take up a thread of the band.

15. So continue, taking a vertical stitch in each gather.

16. When the right side is finished, fasten securely, and cut off the gathering thread.

17. Baste and sew the underpart of the band in the same manner, taking care that the edge of the band corresponds exactly with the edge on the opposite side, in order that the band may not be twisted. These stitches must not show on the right side.

A binding is more easily sewed on in this manner if there is a double row of gathering. A neat binding does not rest wholly upon the setting-in, but fully as much on the gathering and stroking, one depending upon the other.

GATHERS SEWED TO A BAND BY STITCHING AND HEMMING.

Stitching. — 1. Holding the wrong side of the gathered piece towards you, place the middle of the band at the notch in the middle of the gathers, and put in a pin vertically to hold them together (Fig. 4).

2. Pin the ends of the gathers one-fourth of an inch from the ends of the band.

3. Draw up or loosen the gathering thread so that it is the same length as the band, and fasten it by winding it around the pin.

4. With the point of the needle adjust the gathers, so that the fullness is evenly distributed along the band.

5. With the gathers next to you, baste a little above the gathering thread.

6. Stitch the gathers to the band, exactly over the gathering thread, taking up only one gather at a time (Fig. 4), and taking out the pins as you come to them.

7. If, when sewing, the gathering thread should be too short, loosen it by unwinding it from the pin.

8. When the band is stitched on, fasten the thread securely, cut off the gathering thread, and take out the basting thread.

Hemming. — 1. Turn up the band, and crease the opposite edge and the two ends, one-fourth of an inch deep.

2. Cut off the corners of the gathers above the stitching.

3. Folding the band over, pin the middle of the folded edge to the middle of the line of stitching.

4. Pin the ends, being careful to have the corners exactly together

5. Baste the band down, keeping the edge of the fold directly over the stitching.

6. Overhand each end, beginning at the gathers.

7. Hem the band down, taking a stitch in each gather,

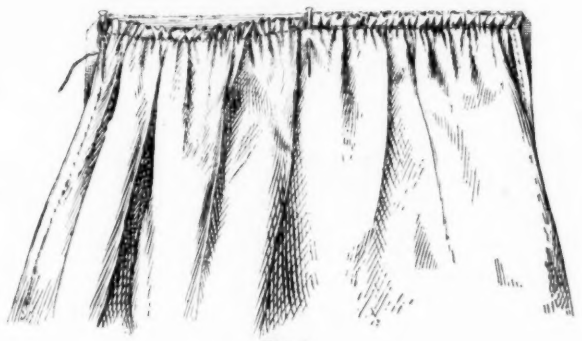


Fig. 4.

a little below the stitching. Do not allow the stitches to show on the right side.

If there are but few gathers, half-backstitching can be used instead of stitching. Great care should be taken to have the ends of the bands meet; some prefer to turn the ends of the band under before stitching, others stitch the ends of the band together before putting it on to the gathers.

GATHERS OVERHANDED TO A BAND.

Overhanding. — 1. Crease the four edges of the band one-fourth of an inch from the edge.

2. After folding lengthwise, baste and overhand the ends, beginning at the corners.

3. Baste the lengthwise edges together.

4. Pin the middle of the band at the middle of the right side of the gathers, and then pin the ends of the gathers and band together (Fig. 5).

5. Tighten or loosen the gathering threads, until they are of the same length as the band, and fasten around the pin.

6. Arrange the gathers with the needle, and put in pins vertically every two inches.

7. Holding the band towards you, overhand the gathers to the band, placing a stitch in each gather.

8. Take out the pins, as you come to them, and fasten the gathering threads.

Suggestions. — A narrow binding for finishing a gar-

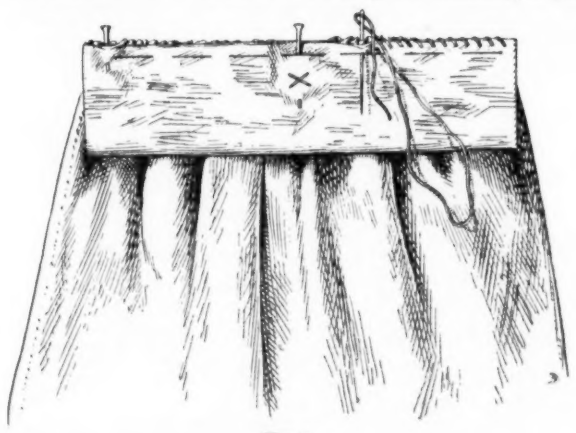


Fig. 5.

ment should be cut on the bias. To strengthen a binding, where a button is to be placed, turn in one inch at the end of the band before folding it, and baste pieces of cloth on the under side where other buttons are to be placed; at the button-hole end, turn in half an inch. Cut a button-hole in a binding nearer the gathers than the folded edge, so that the garment will be held in place firmly.

THE CRICKET.

BY P. B. WHELPLEY.

HOW many children have heard the cricket sing? When we sit by the fireside during the long winter evenings we often hear a merry chirp, pitched on a high key, like the chirp of a bird. If we look carefully about, we will find, safely tucked away in a crack or crevice, near the fire, a cricket. Examine him carefully and you will find his hind legs long and strongly built for leaping. (See Fig. 1.)

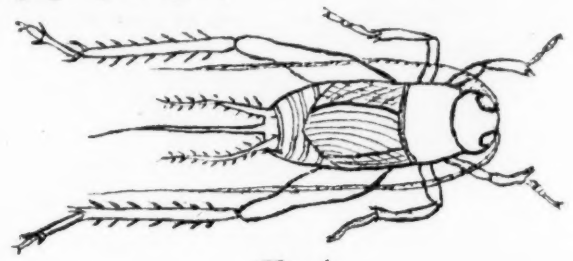
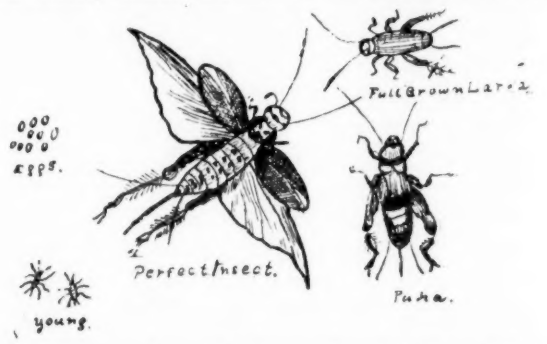


Fig. 1

The wings are neatly folded, extending in a slender form beyond the wing covers. The common house cricket is about one inch long. He is a cousin to the grasshopper and locust. They live in the vicinity of ovens; remain hiding by day, coming out by night in search of food, which consists of bread, meal, and smaller insects. The male makes the merry chirp by rubbing the hard border of one wing against the underside of the other.

In winter, without the heat of the fire, the cricket be-



comes drowsy and remains in an almost lifeless state till warm weather returns.

In Germany the children keep them in boxes by the fire to hear them sing.

There is a species in Sicily that can be heard at the distance of a mile.

A Science Temperance Lesson.

BY S. ELLEN BROWN.

I WITNESSED, not long ago, a science lesson which had as great an effect for good upon the children as any temperance lecture could have done. The children were given for their morning reading lesson a chapter or two in "A Primer of Health." The subject was "Alcohol." After the reading the teacher questioned upon what had been read. Most of the children had seen alcohol; they thought it would burn, because the book said so; none of them knew just what it was.

After giving facts to the children and explaining them, the teacher said she would show the effects of alcohol at the time of the language lesson in the afternoon. She came to the lesson equipped with a saucer, a glass of water, a small bottle of alcohol, some matches, and an egg. These were all she would have time to use, but she could have added to her list a small piece of raw beef, an alcohol lamp, and a test tube for the egg.

Pouring some of the water into the saucer, the teacher lighted a match and dropped it in. Of course, it was extinguished. The experiment was repeated; then the water was poured out, the saucer dried, and a small quantity of alcohol poured in. A match was lighted and dropped into the alcohol; the light-blue flame burst up and continued to burn until the alcohol and match were consumed, the wood of the match not burning until the alcohol was gone. This experiment was repeated; then the saucer was dried again and the white of the egg put in, a small amount of alcohol was poured on the egg and the children watched the coagulation. The saucer was then set away to be looked at again in an hour or so.

The children had seen the effect of alcohol on substances, the teacher told them of a like effect on the organs of the body, and led them to feel that a healthy body was a great thing to be desired. Indeed she seemed to inspire them with a desire for a strong mind in a strong body.

The lesson was finished with a few written sentences on the effects of alcohol.

UNIFORM EXAMINATIONS FOR COMMISSIONERS' CERTIFICATES.

NEW YORK STATE DEPARTMENT OF PUBLIC INSTRUCTION.

SECOND AND THIRD GRADES.

[Thursday and Friday, January 10 and 11.]

[Other subjects of the New York examinations were given in the February issue.]

PHYSIOLOGY AND HYGIENE.

1. Name two bones which articulate, forming a ball-and-socket joint.

2. (*a*) Locate the eustachian tube. (*b*) State its function.

3. What name is applied to the strong inelastic tissue whose special office it is (*a*) to attach the muscles to the bones; (*b*) to bind the muscles down and hold the bones together at the joints? (*c*) What elastic tissue makes cushions at the ends of bones forming joints?

4. What provision has nature made for regulating the supply of light to the eye?

5. In what class of blood-vessels does the change of color of the blood take place?

6. Name two glands outside of the alimentary canal that supply fluids for completing digestion.

7. Describe the action of the valves of the heart.

8. Mention two of the evil effects that are likely to result from decayed teeth.

9. When children are trained to walk, stand, and sit erect, what is the effect on (*a*) the muscles of the back (*b*) the bones of the spine; (*c*) the lungs?

10. Mention some of the evil effects of smoking cigarettes.

METHODS AND SCHOOL ECONOMY.

1. State some of the inferences Mr. Page drew from a neglected pear tree.

2. Name three things in a child's education for which the teacher is in a measure responsible.

3. Explain the statement, "Knowledge alone is not education."

4. A pupil asking assistance should not always be immediately aided. Why?

5. Give at least two objections to making many rules for school observance.

6. (*a*) Name four methods of teaching reading. (*b*) Briefly describe one of them.

7. Name at least four requirements that should be made of pupils in oral spelling.

8. Name devices for noting mistakes in written spelling.

9. Name the ends sought in a good course in drawing.

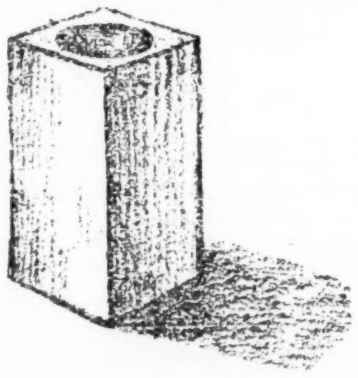
10. Give a brief plan for teaching one of the parts of speech.

DRAWING.

NOTE.—Use compasses for drawing circles. Take measurements from ruler. The measure of all work shall be at least one inch.

1. (*a*) Blending yellow and blue will produce what color? (*b*) Name five standard hues. (*c*) What color will be produced by mixing three parts red and one part orange?

2. (*a*) A cube is quadrisected vertically. Give name of parts as new wholes. (*b*) Bisecting an ellipsoid *horizontally*, what geometric plane figure does the cut surface represent? (*c*) Bisecting an ellipsoid *vertically*, what geometric plane figure does the cut surface represent?



3. In mechanical draughting name four common, simple tools which are necessary.

4. Make a working drawing and cross section of object indicated in sketch. Height 2″, width 1″, diameter of opening

5. (*a*) Study sketch and name the type solid upon which the object is based. (*b*) Make a pattern of the object indicated in sketch. The measure of each side is $1\frac{1}{2}'' \times \frac{1}{2}''$.

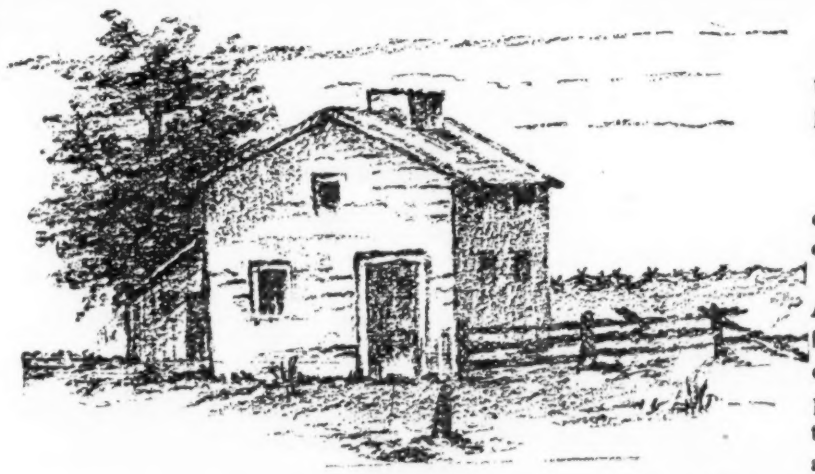
6. (*a*) Copy sketch given. (*b*) Conventionalize the open blossom and place within a geometric enclosing figure. The one best adapted to the flower. (*c*) Name the enclosing figure.

7. (*a*) In a sketch how should the quality of line vary to express different degrees of distance? (*b*) What kind of line would best express the character of the surface of a potato?

8. (*a*) Draw to represent a right angled triangular prism. Position in front and below the eye, vertical and one plane face toward the observer. (*b*) Repeat and modify to represent a waste-paper basket.

9. (*a*) Copy sketch given. (*b*) Show lines of convergence.

10. Draw to represent separately the four type solids which combined would produce the general outline of building shown in question 9. Types to be in the same position as house.



CIVIL GOVERNMENT.

1. (*a*) Define a monarchy. (*b*) State one possible advantage of this form of government.

2. Why are laws necessary?

3. We say that the right of liberty is an inalienable right. How, then, can we imprison a person for life?

4. Define as used in civics or politics (*a*) convention; (*b*) caucus; (*c*) delegate.

5. Distinguish between a bill and a law.

6. Distinguish between excises and imposts according to the United States Constitution.

ANSWERS.

PHYSIOLOGY AND HYGIENE.

1. The humerus and scapula or the femur and innominatum bone.

2. (*a*) It extends from the middle ear to the pharynx. (*b*) It affords a passage for air between the tympanum and the pharynx.

3. (*a*) Tendons. (*b*) Ligaments. (*c*) Cartilage.

4. The iris expands and contracts, thus diminishing or increasing the size of the pupil of the eye.

5. In the capillaries.

6. The liver, pancreas, and spleen.

7. They open, allowing the blood to flow through them in its onward course, and close, preventing the blood from flowing backward.

8. Bad breath, toothache, and neuralgic pains; impaired health.

9. (*a*) To strengthen the muscles. (*b*) To keep the bones in their proper form. (*c*) To allow freedom of movement to the lungs.

METHODS AND SCHOOL ECONOMY.

1. Education is necessary to develop the human soul. Education should begin early. It should be right education. The educator should be a safe and honest man.

2. The bodily health, the intellectual growth, and moral training.

3. Knowledge may be a possessionof facts, rules, etc. Education is the waking up of the mind, arousing the mind to think, awakening its powers to observe, to remember, to reflect, and to combine.

4. It diminishes self reliance.

5. The multiplicity of specific rules will naturally lead to offences. It is difficult to judge acts of pupils by fixed laws. The rules leave the teacher no discretion.

6. (*a*) The alphabet method, the phonic method, the word method, and the sentence method. (*b*) Answers will differ.

7. To pronounce accurately the words before they are spelled; letters, syllables, and words after they are spelled.

8. Sometimes have monitors examine the exercises and mark the mistakes. Have the teacher or a pupil spell the words correctly, and the pupils check misspelled words. Have the pupils compare the written exercise with the words as printed in the book.

9. The recognition of the child's individuality, the recognition of nature as a part of the child's environment, the recognition of industry and art as parts of the child's social environment.

CIVIL GOVERNMENT.

1. That form of government in which the supreme power is vested in one person.

2. To assure persons their rights.

3. A person may by committing crime work, as a penalty, a forfeiture of any right.

4. (*a*) An assembly of delegates. (*b*) A meeting of the voters of any party for the purpose of nominating candidates, electing delegates, or considering party measures. (*c*) A person chosen to represent a certain constituency in a convention.

5. A bill is the form of a law before it receives the sanction of the legislature and chief executive.

6. Excises are taxes levied on home products; imposts are taxes levied on imported goods.

ARBOR DAY.

BY LIZZIE M. HADLEY.

First child.—
See where the sunshine is gilding the plain,
Second child.—
Hark, there's the patter of falling rain!
Both.—
By the sunshine we see and the rain we hear
We know that April is drawing near.
Third child.—
Yes, even now she cometh this way.
Fourth child.—
O, who is with her?
All.—
'Tis Arbor Day.
[Enter Arbor Day, singing; tune, "Auld Lang Syne."]
Dear children, are you glad once more
To see me come this way?
O, surely, you have not forgot
Your own dear Arbor Day;
Your Arbor Day, my dears,
Your Arbor Day;
O, sing a song of welcome now
To Arbor Day.

Children sing.—
O, no, we never can forget
Our happy Arbor Day;
And now that winds no longer blow,
But spring-time zephyrs play,
We welcome Arbor Day,
Our Arbor Day.
A welcome glad we give to you
O, Arbor Day!

Arbor Day.—
Like chiming bells your welcome rings,
'Tis sweet as the song the bluebird sings.

Children.—
What are you bringing us this year?

Arbor Day.—
Trees for planting and words of cheer.

Children.—
Trees? O we've planted trees before.
What is the use of planting more?

Trees.—
Why should you plant us? Don't you know
That every one of us means to grow
Tall and straight and strong, till at last
You rest in the shadows our green boughs cast?
God hath endowed us with bounteous hand;
We would shower blessings o'er all the land.
Yes, fruits and nuts we would bring to you,
And warmth, and shelter, and beauty, too.
So, plant us here while the swallows fly,
And the April clouds go sailing by.

Children.—
Which trees shall we plant?

Trees.—
Plant every one.

Children.—
No, no, dear trees, that cannot be done.
But we'll choose from these now standing here,
And the others must wait till another year.
Now, each come hither and tell your name,
And all your virtues to us proclaim.

Trees.—
We hear, we hear, and we will obey,
We love this glorious Arbor Day.
But, first, we've a little song to sing;
So listen, we'll make the echoes ring.

Song.—Tune, "Beulah Land."
From meadow, mountain, and from plain
We come, we come, we come again.
The winter time at last is o'er,
And Arbor Day is here once more.
O, Arbor Day! O, Arbor Day!
The fields that once were dull and gray,
Released from Winter's icy chain,
Are slowly greening o'er again.
So joyfully we come this way
To meet you, merry Arbor Day.

Arbor Day—
O, the breezes soft in your branches play,
And I welcome you here. I am Arbor Day.
Now, one by one, you may pass by me,
And tell us why you should planted be.

Fruit trees.—
Apple and cherry, peach and pear,
Ripe and juicy, rosy and fair,
Plant us all for the fruits we bring,
And the birds on our branches that build and sing.

School.—
We plant upon the sunny lea,
A shadow for the noontide hour,
A shelter from the summer shower,
When we plant the apple tree. — *Bryant.*

Children (sing).—
Cherries are ripe, cherries are ripe,
O, give the baby one. — *Nursery Song.*

School.—
Peaches are blushing and ripe and fair,
Like a golden bell, hangs a juicy pear.

Arbor Day.—
With you, little trees, it is well, it is well.
Who now doth come with a story to tell?

Nuts.—
Chestnut and walnut, butternut, beech.
You surely can find a place for each.
And when autumn comes, from branches brown,
With the touch of the frost our nuts drop down.

Arbor Day.—
Autumn brings a happy time,
Told in story, sung in rhyme.

School.—
The sound of dropping nuts is heard,
Though all the trees are still. — *Bryant.*

Arbor Day.—
Pretty trees, we will plant you for Arbor Day.
Now, tell me what others are coming this way?

Evergreens.—
Cedar and balsam, fir and pine,
Every one of us stand in line.
Healing and strength we'll bring to you,
And you'll always find us loyal and true.

School.—
Ancient pines!
Ye bear no record of the years of man.
Spring is your sole historian. — *B. Taylor.*

Arbor Day.—
O, fair, green trees! you ever seem to be
The emblem fair of immortality.
When other trees are bare, and cold winds blow,
You lift green branches out of drifting snow.
Plant you? Aye; while one tree shall stand,
May your green plumes o'er wave above our land.

Plum.—
Plant me, the plum, and every year
I'll bring you many a purple sphere.

School.—
Frost-touched, the autumn time now comes,
And 'neath their weight of purple plums,
In all their juicy sweetness sent,
A luscious load, the trees are bent.

Arbor Day.—
We will plant you, O plum tree, and every year
The joys of the summer in your globes shall appear.

Maple.—
Plant me, the maple, my sap is sweet,
Syrup and sugar I'll bring to eat.

School.—
The maples have borrowed a tint from the sky,
And are rosily blushing as autumn goes by.

Arbor Day.—
Your boughs, O maple, are fair to see;
So, on Arbor Day, you shall planted be.

Trees.—
O, plant and cherish us; all are fair,
And well we'll repay your tender care;
To bless and brighten the home of man,
We will all of us do the best we can.
We'll temper the winds that roughly blow;
We'll guard from ice and from drifting snow;
The climate, the rain, and the crops shall be sure;
The air that you breathe shall be fresh and pure.
You'll be better and wiser in every way,
If you only will keep our Arbor Day.

Uses of Trees.

[Exercise for fourth or fifth grade.]

[The success of a simple exercise is its spirit, in having every part memorized and recited promptly. Whenever any part is a reply to the preceding, it must be given with a snap.]

1. Trees beautify our homes.
2. They hold our hammocks.
3. Trees influence climate.
4. They temper a hot day.
5. They heat a cold day.
6. Trees furnish ties for the railroad rails.
7. They furnish houses.
8. Trees make paper for wrapping.
9. They rap boys for mischief.
10. Maple trees make sugar.
11. Spruce trees give us gum.
Teacher.—Why, Mary!
12. Trees make ships.
13. For shipping trees.
14. Trees furnish chestnuts.
15. So do "drummers."

Return of the Birds.

[*Tune:* "Billy Boy."]

OH where have you been,
Little birds, little birds.
Oh where have you been,
Little birdies?
"We have been far away,
Where no winter winds can play,
To a land all beautiful with flowers."

Oh, why did you go,
Little birds, little birds,
Oh, why did you go,
Little birdies?
"We could not stay here
Through the winter cold and drear,
For you know we are tender little creatures."

How long will you stay,
Little birds, little birds,
How long will you stay,
Little birdies?
"All the bright summer days,
Singing all our sweetest lays,
And we hope we are welcome with the children."

Oh, yes, you are welcome,
Little birds, little birds,
Oh, yes, you are welcome,
Little birdies.
Your songs we love to hear,
And your presence is so dear,
We all wish you might stay with us forever.

Who Chose the Tree.

BY ANGELINA W. WRAY.

OUT on the porch they held their meeting,
Dorothy, Polly, and Joe,
The wise "committee" the school appointed
To choose a tree, you know.
Dear little Robin heard them planning,
Though he was busy at play,
And "Me tan pick the tree," he shouted,
"Me knows about Arbor Day!"

But Polly smiled and Joe looked merry,
And Dorothy shook her head;
"To choose *this* tree, oh, baby Robin,
Needs somebody *wise*," they said.
Out to the woods they went together,
Dorothy, Polly, and Joe,
And dear little Robin followed after,
With rosy cheeks aglow.

There they saw, in the spring-time splendor,
Maple and willow and pine,
Elm and tulip and oak and cedar,
All so stately and fine.
And Dorothy thought that the beech was fairest,
And Polly would choose the birch,
While Joe declared when they found the chestnut,
They need no longer search.

They talked and talked the matter over
Till the yellow sun sank low;
But they *couldn't* decide in such a hurry
Which one was best to go.
So home in the dusk they wandered sadly,
As grave as grave could be,
And dear little Robin followed, clasping
The tiniest Christmas tree.

Slim and straight were its tapering branches,
Strong were its roots of brown,
And baby Robin had chosen wisely
The daintiest tree in town.

"Isn't it pretty?" he asked them, proudly.
"It hasn't a light, you see,
And it hasn't gwown any nuts or pwesents,
This cunnin'est baby tree;
But won't it do for the school to-morwer?
And didn't I s'prise you, say?"
And pretty Polly at once pronounced it
"Just right" for Arbor day.

Next morning off to the school they hurried,
Dorothy, Polly, and Joe,
The wise "committee" the school appointed
To choose a tree, you know.
And there they planted the tiny treasure,
And nobody knows but me
That it wasn't at all the wise committee —
But Robin — who chose the tree!

OH, you pussy willow,
Pretty little thing!
Coming with the sunshine
Of the early spring;
Tell me, tell me, pussy,
For I want to know,
Where it is you come from,
How it is you grow.